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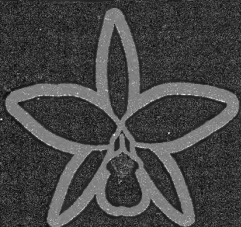
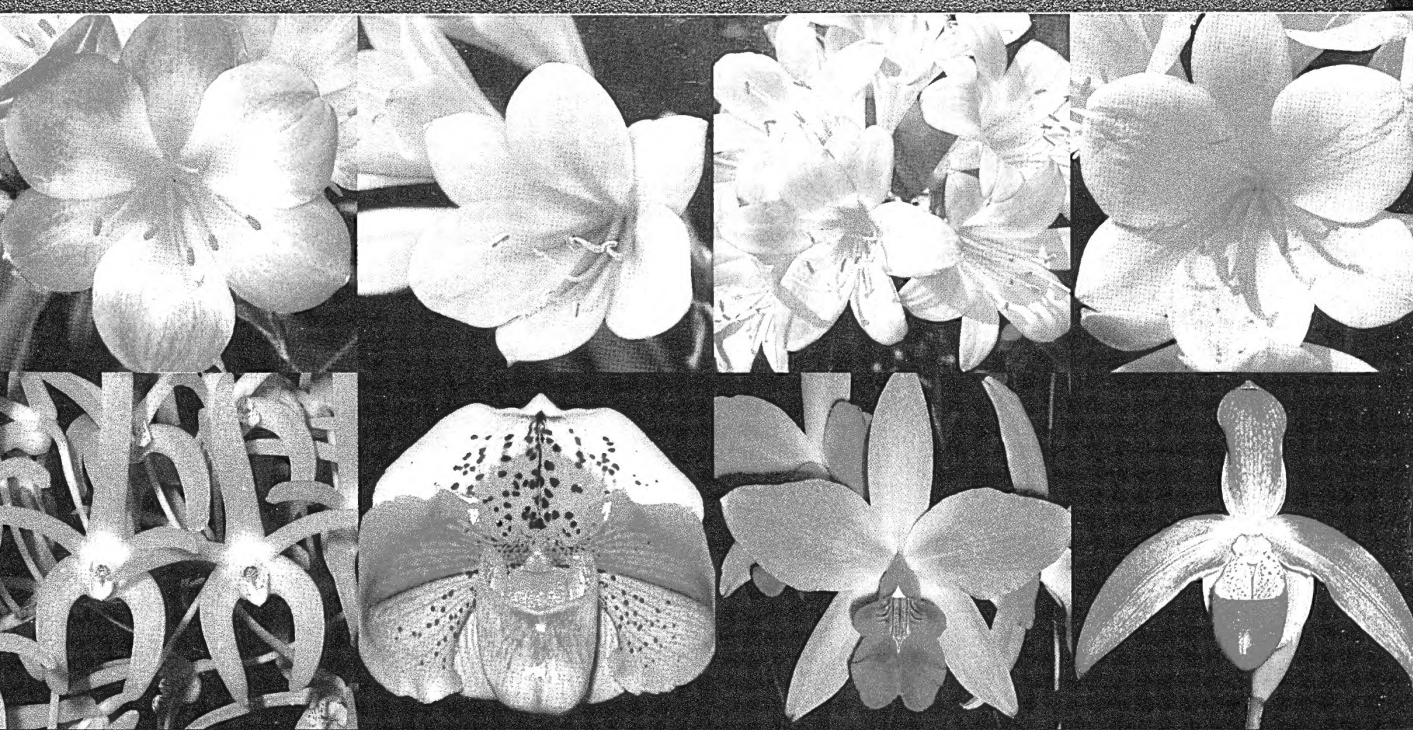


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From the Editor's Desk

D*endrobium* Avril's Gold is a very popular orchid that regularly is successful on the showbench and at orchid society/club meetings. Many cultivars have won championships and quality awards. In this issue Ray Clement (Tinonee Orchid Nursery) gives us a firsthand account of this orchid and its history, that now goes back over three decades. I find it amazing that there are still unflowered seedlings that are over 30 years old!

Arthur Boyd was a painter, potter and printmaker from a family of artists. Boyd aimed to convey an inner emotional vision through his work, rather than describing the external world. He painted lyrical and emotive allegories on universal themes of love, loss and shame, often located in the Australian bush. These artworks draw on a wealth of literary and mythological sources as well as intensely personal and often ambiguous symbolism. Boyd had a strong social conscience and his paintings engage deeply with humanitarian issues. He was recognised as the Australian of the Year in 1995. Many would be unaware that Boyd featured orchids in a number of his paintings and etchings, especially rock orchids that naturally grew on rocks near his property, close to the banks of the Shoalhaven River, NSW. In this issue Mike Leggett discusses some of his orchid-related works.

We also showcase the Victorian Orchids of the Year 2017, a long running initiative of the Orchid Societies Council of Victoria (OSCOV), the largest orchid organisation in the southern state. OSCOV have always been very proactive and successful in promoting orchids from their inception in 1992.

Again we see descriptions, drawings and images of newly described Australasian native orchid species. The genus *Plumatichilos* was previously included within *Pterostylis* and new taxa continue to be recognised. These form a very distinctive group of deciduous terrestrial orchids often referred to as bearded greenhoods. David Jones and Mark Clements also describe a new species of *Danhatchia* from New South Wales, with the type species of this genus endemic to New Zealand. Robert Bates also discusses bearded orchids from the genus *Calochilus* that occur on Kangaroo Island, South Australia.

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Cover Shot

Dendrobium
Australian Rhubarb Pie
'Kahleen'

owned by Daryl Mills
was the Victorian Orchid
of the Year 2017



The *Avril's Gold* Story

by Ray Clement

On 19th August, 1990 I travelled to Cessnock to Judge the Maitland Orchid Society's show. On the way I called in to see my good friends John and Ruth Purvis. We then stopped at Ray and Avril Hill's home for a cuppa and to see an orchid he wanted to show me. The plant was *Dendrobium* Aussie Child. The plant was of a modest size in a 100mm-125mm pot from memory. The flowers were average shape but it was the extraordinary colour that was most impressive. It was a deep glowing red shade, not purple, with deep gold underlay. I had never seen such a colour in a native *Dendrobium* before.

John and I convinced Ray to let us take the plant with us to put in the show for him. It won Grand Champion and was awarded a Highly Commended Certificate and an Award of Distinction. I remember voting in favour of the AD but was against the HCC based on the flowers poor shape. Needless to say, Ray was ecstatic. The plant was given the clonal name 'Avril'.

After the show Ray Hill used the plant to make a number of hybrids. He crossed it with *D. Ellen*, *D. tetragonum* and *D. speciosum* 'Golden Fluke'. The following year he made some further crosses, amongst them with *D. speciosum* 'Windermere'. When the flasks were ready I purchased most of the available flasks from him. Ray was ill with cancer during this time and I credit the plant with keeping him alive a few years longer. After Ray's death, Avril took the plant of *D. Aussie Child* 'Avril' and placed it on his grave.

The seedlings with Aussie Child 'Avril' were very slow to grow from flask, especially those with Ellen and *tetragonum*. Eventually we flowered a few of the seedlings and the colour was extraordinary but again the shape was poor. I found the plants very hard to grow and eventually most died. In 1994 Avril registered Aussie Child x Ellen as *Dendrobium* Ray's Dream and in 1995 Aussie Child x *tetragonum* as *Dendrobium* Ray's Girls for his granddaughters of which he was very fond.

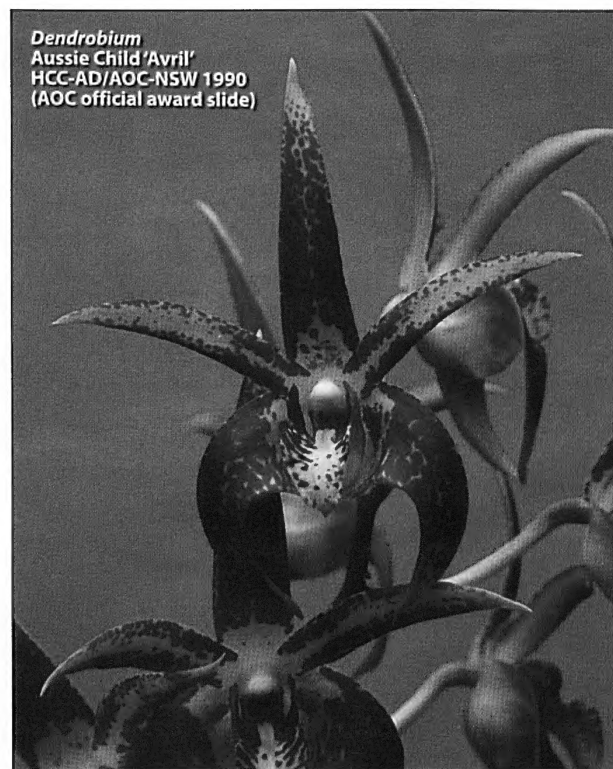
A few years later we started to flower some of the *speciosum* hybrid seedlings. Aussie Child x *speciosum* 'Golden Fluke' were very colourful, mostly gold with heavy red overlay, but poor shape and very poor growers. The cross with 'Windermere' was much more rewarding. Maybe not as much red overlay as with 'Golden Fluke' but much better shape. A really nice orchid. On one of my cuppa visits with Avril Hill she gave me permission to register the cross which I did in 1998 as *Dendrobium* Avril's Gold.

All of the *Dendrobium* Aussie Child seedlings were poor growers, but by using what I consider the best clone of *Dendrobium speciosum* to make hybrids, that is 'Windermere'

some were reasonable growers. One of the very best was a clone I called 'Ray' for Ray Hill. I had this plant mericloned and in 2001 received the plants in flask. Even these were slow. I consider that a good native orchid must not only look good, but must be a strong and vigorous grower, not just for the experts, but for the new enthusiasts as well. As a consequence I decided to stop propagating *Dendrobium* Avril's Gold and its progeny.

Many *Dendrobium* Avril's Gold clones have been awarded and won prizes at shows, mostly grown by a few expert growers like Don Cruickshanks, Henk van den Berg and Andy Gatt. Some have still not flowered yet but are still alive. Most have died. ■

Ray Clement
Tinonee Orchid Nursery
Tinonee, NSW
www.tinoneeorchids.com





Dendrobium
 Avril's Gold 'Ray'
 – grown from a young
 mericlone by
 master growers
 Andy & Jessie Gatt,
 was Grand Champion at
 Parramatta and District
 Orchid Society
 Winter Show 2013
 (photo: DPB)

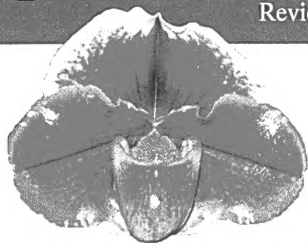


Dendrobium
 Avril's Gold 'Ray'
 HCC/AOC 2000
 – original plant grown by
 Tinonee Orchid Nursery
 (photo: DPB)



Dendrobium
Avril's Gold 'Wingham'
 AM/AOC 2003
 – outstanding
 pure colour
 cultivar grown by
 Don Cruickshanks
 (photo: DPB)

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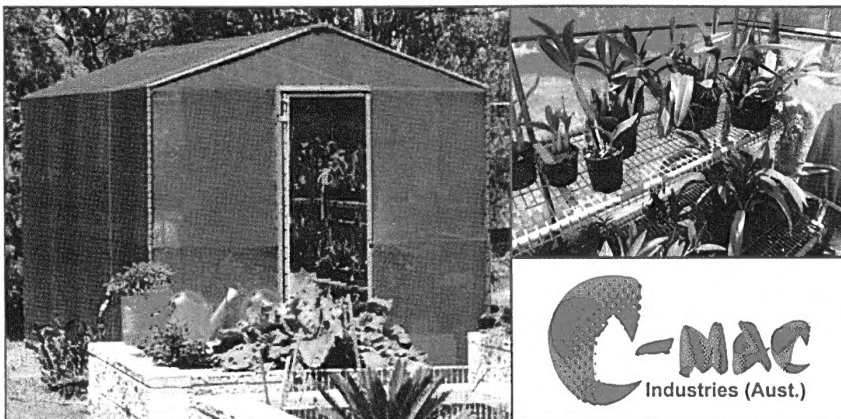
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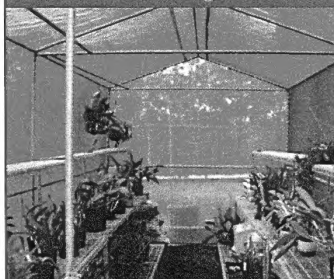
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Dendrobium
Avril's Gold 'Louanne'
– grown by
Hills District Orchids
(photo: DPB)





The Orchid and the Painter

- the unique art of Arthur Boyd
(1920-1999)

by Mike Leggett

Arthur Boyd grew up in Victoria in the 1920s and 1930s. One of the extensive Boyd family of painters, ceramicists, architects, writers and musicians; there were few areas of creative endeavour in which they have not lead or at least participated.

He found his fortune in England where he lived from the early 1960s onwards. His work sold so well that fourteen years later he was able to add to his property portfolio, a farmstead on the Shoalhaven River. A prolific painter, drawer,

printer and ceramicist, he and his wife Yvonne relaxed only when they made their regular pilgrimages to the Shoalhaven, travelling by sea in both directions, to and from Britain.

The Orchid and the Painter, is about the references made in many of Arthur's paintings, etchings and drawings to the orchids he encountered in and around his Bundanon Homestead on the Shoalhaven River, west of Nowra, New South Wales.



Dendrobium speciosum
- the Sydney Rock Orchid,
the inspiration of many of
Arthur Boyd's paintings
(photo: DPB)

Painting #1: Arthur Boyd, *Rock Orchid, Fire and Straight White Trees*

The orchid in Australia has been recorded and documented by many botanical artists. The earliest and most celebrated was the Austrian, Ferdinand Bauer, followed by many from R.D. FitzGerald to W.H. Nicholls and J.J. Riley. A popular subject amongst painters for at least two centuries, and for photographers too. But for a shorter time and daresay, less application of the artistic imagination. Martin Johnson Heade, a 19th Century American painter associated with artists of the Hudson River School is perhaps best known for his exotic *Cattleya Orchid and Three Hummingbirds*. However, there was an Australian painter, known for his erotic content, for whom the orchid was more than a complex intertwining of shapes, colours and textures, who depicted the plant as talisman, a *leitmotif*, an ancient presence acting as harbinger to the events of the contemporary world.

Ensnared by the River, he would often work in the landscape, *en plein air*, responding with paint and gesture to what he saw in front of him. The Sydney Rock Orchid (*Dendrobium speciosum*) featured very often in his work, peripherally in some works, or in *Rock Orchid, Fire and Straight White Trees*, painted in 1977 at centre stage. This is not a botanical record of the species nor even a portrait but a rendition of this particular specimen plant in its natural setting, on a rock surrounded by *Eucalyptus maculata*, the Spotted Gums characteristic of the South Coast of New South Wales. The shades of yellow and white are deftly applied, the leaves and pseudobulbs simply shadowy marks atop the contrasting greys and browns of the rock.



**Rock Orchid, Fire
and Straight White Trees,
1977
(Arthur Boyd)**

Arthur's approach to paint was not as an Impressionist, though his management of oils was informed by the workings of painters from the previous 100 years. The overall technique was far more physical, almost Expressionist, working rapidly and boldly, layering colour to maintain a density of nuance, helping to conjure the sense of bush in depth across a sloping terrain of blacks, browns and greys. One of the painters whose work he admired was the European Oskar Kokoschka, a master of this approach.

Handling paint since his teens, making pictures was second nature to him. Essential to understanding these statements and what lies behind the surface of his paintings are the ideas expressed. He once observed, "Rock Orchids grow in profusion on the cliffs at Bundanon, and like all Australian plants which seem to thrive on being tortured, they proliferate when a fire has been through the bush. I put the two ideas together, but I also see the orchid, one of the most spectacular plants found in the bush, as a symbol of regeneration."

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**Painting #2: Arthur Boyd,
Narcissus Suite
- *The Orchid on the Rock*,
1983, etching and aquatint.
Bundanon Trust Collection.**

Throughout his career, Boyd had periods of obsession with certain figurative beings, cropping up in various guises at different times. An instance is in the *Bride* series; or in the classical, the *Narcissus* series. A book he made with the poet Peter Porter again refers to the rock orchid:

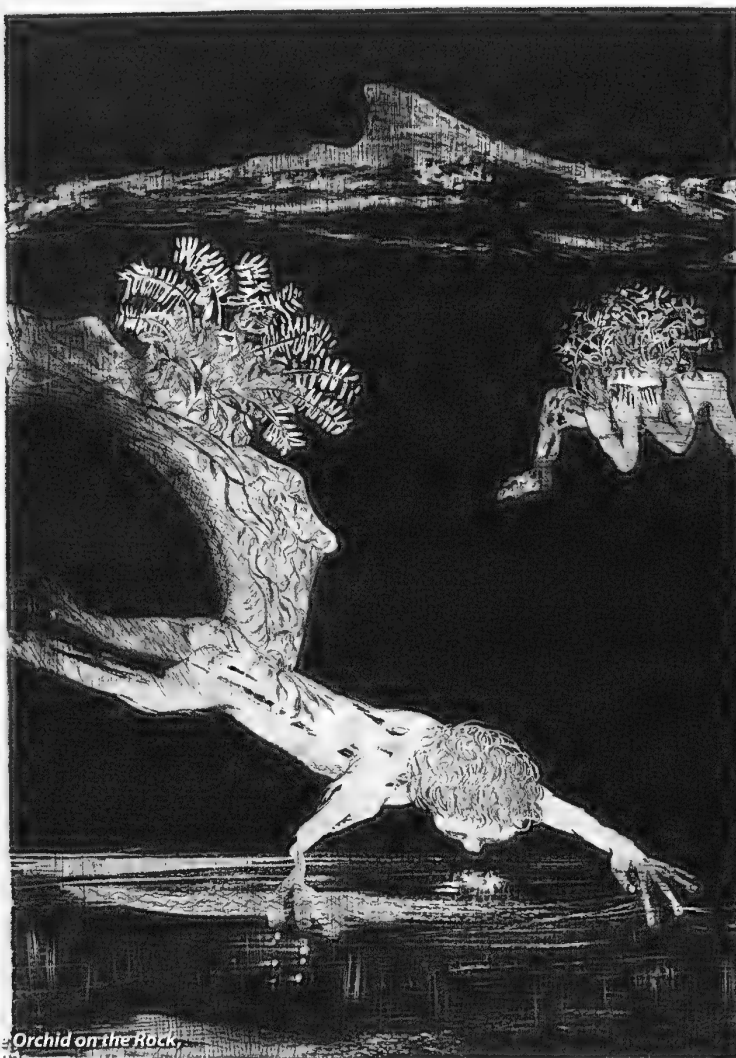
*The orchid rears its dozen necks
On a cushion of self: not scent
But a colourless colour, so intense
It eats the light, brings us up close.*

He employed the ancient Greek fable of the young man who is captured by the sight of his own image. As a way of commenting on the vanity and foolishness of youth, living life on the edge of a catastrophe, which within Boyd's obsession was the imminent danger of nuclear war, something which again, unexpectedly reared an ugly head recently.

In this context we can speculate why it was Boyd who used the image of the Rock Orchid in so many settings. He was a man of few words but immensely interested in science and the revelations scientists were making year on year. Though he did not make pictures with the eye of a scientist, his mind engaged with their findings. Without doubt he would have known the family Orchidaceae is one of the oldest of the flowering plants. Its presence establishes in the picture an image of longevity as well as great beauty, contrasting the short-sighted ambitions of humans with the timelessness of the natural world.

When in 1993 he left Bundanon's two properties and nearly 3000 acres (over 1200 hectares) of bush to the nation he emphasised the importance of knowledge. The practice of research he demonstrated throughout his life, constantly reading and innovating technique. He stipulated that the premises he was gifting should be made available to artists and scientists in residence, his intention clearly being to encourage the two cultures to work more closely together, rather than apart.

The Bundanon Trust (www.bundanon.com.au) for a decade has encouraged this with an annual event Siteworks, in September, the prime rock orchid flowering season. But besides running residential accommodation for artists, scientists and schools, the property is open to the public on



The Orchid on the Rock,
1983
(Arthur Boyd)

Sundays throughout the year. The extensive walking tracks enable visitors to encounter the places Arthur painted and at different times of the year, see the orchids he would have known. Thumbnail and Streaked orchids (*Dockrillia linguiformis* and *Dockrillia striolata*) often appear at the periphery of some walks, a variety of Greenhood too, many of which can be found quite near to the homestead of Bundanon (*Pterostylis nutans*, *Pterostylis grandiflora*, *Pterostylis erecta*, *Pterostylis curta*), and of course the epiphytic grass-like *Cymbidium suave*. Arthur Boyd was announced as "Australian of the Year" in 1995.

**Painting #3: Arthur Boyd,
Nodding Green Hood,
1997, oil on canvas.
Bundanon Trust Collection.**

One of the last works he made shortly before he died in 1999, known as the Nodding Green Hood, can be seen in the studio preserved at the site and just as he left it. A black bird with red eye is hanging sideways in a tree in the upper right corner. A grassy shrub is in the centre with thick red paint used for this and also the signature "Arthur Boyd". The background is grey and reds with a horizontal horizon line and blue sky. Various species of greenhoods are encountered on one of the bush walks that lead to the Amphitheatre. It was painted in 1997, yet strangely dated 1999.



*Nodding Green Hood,
1997
(Arthur Boyd)*



Pterostylis rufa
– this is the actual
species (also known as
Oligochaetochilus rufus)
that Boyd painted as the
"nodding green hood"
(photo: DPB)



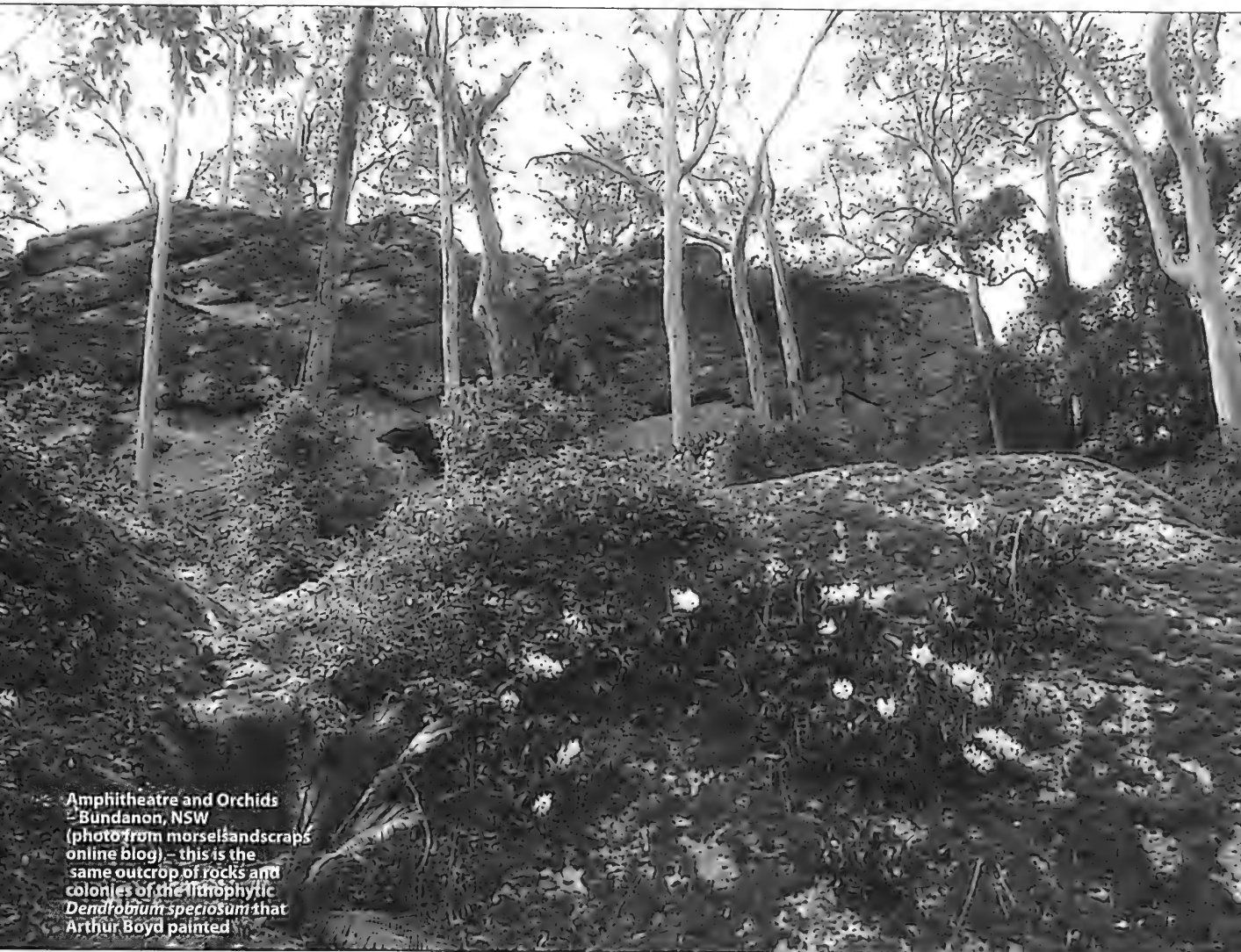
Pterostylis nutans
– the real Nodding Greenhood,
Shoalhaven River
(photo: Mike Leggett)



Prerostylis grandiflora
– the Cobra Greenhood
(photo: Jolande Beemster)

**Painting #4: Arthur Boyd,
The Amphitheatre, 1993, oil on canvas. Bundanon Trust Collection.**

The Amphitheatre, an impressive collection of massive sandstone rocks at the edge of the escarpment, resplendent with the lithophyte Sydney Rock Orchids (*Dendrobium speciosum*), blooming in September and October. Note the overly large snake in the centre of the painting.



Amphitheatre and Orchids
- Bundanon, NSW
(photo from morselsandscapes
online blog) - this is the
same outcrop of rocks and
colonies of the lithophytic
Dendrobium speciosum that
Arthur Boyd painted

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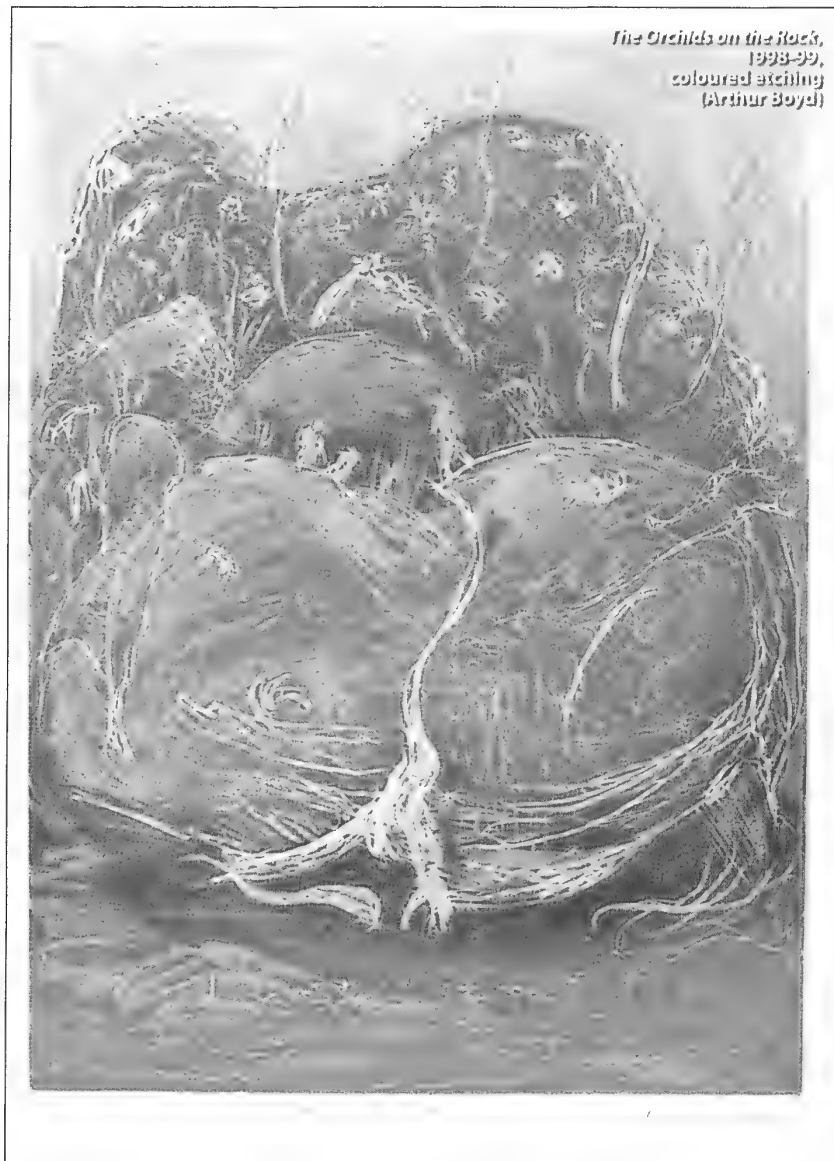
The Amphithéâtre,
1993
(Arthur Boyd)

**Painting #5: Arthur Boyd,
The Orchids on the Rock,
 1998-99, coloured etching.
 Bundanon Trust Collection.**


The Amphitheatre is also where a film was shot in 1993, with Arthur assisted by Yvonne and his assistant setting up a large canvas and preparing the paints for Arthur to work with knife and hands, over the course of the day. The painting can be seen in his studio at Bundanon. Later he made a coloured etching, the orchids are happily still in place. ■

Mike Leggett

Email: legart2010@wondercom.com.au



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Victorian Orchids of the Year 2017

by Michael Coker

The Orchid Societies Council of Victoria (OSCOV) judged the 2017 Victorian Orchids of the Year (VOOTY) earlier this year. Each orchid awarded by the OSCOV Judging Panel during the year is automatically entered in the VOOTY finals, and growers may submit additional entries for consideration.

The VOOTY are awarded from photographs, because obviously not all plants can be considered by the OSCOV judges at the same time. The OSCOV Registrar presides at the VOOTY panel meeting, and the photograph presentation is prepared by the OSCOV Awards Secretary.

Victorian Orchid of the Year 2017

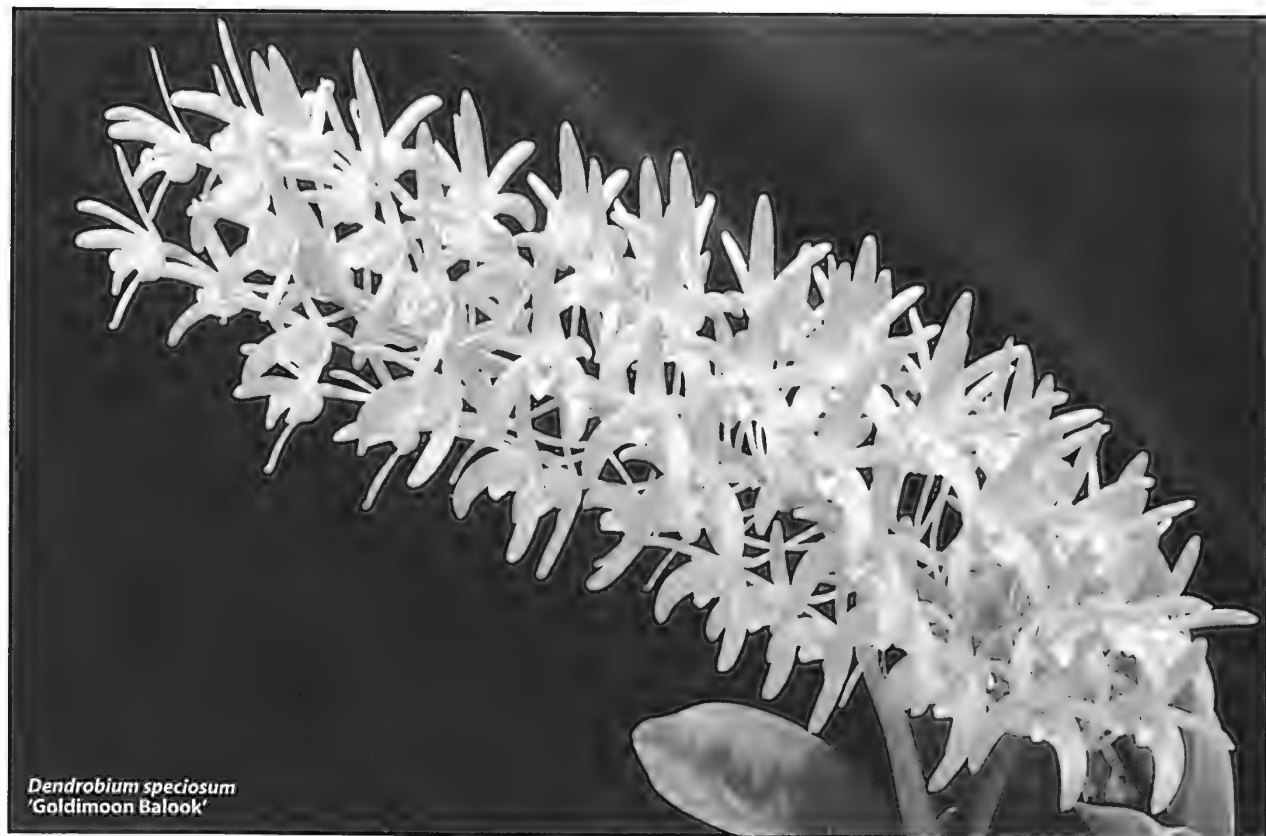
The Memoria Gunter Haar Award for Best Cultured Orchid of the Year (Sponsored by the Berwick Orchid Society) plus the Australian Native Hybrid Orchid of the Year

– The Memoria Chris Waterman Award (Sponsored by the Mornington Peninsula Orchid Society) goes to ***Dendrobium Australian Rhubarb Pie 'Kahleen'***, owned and grown by Daryl Mills from Gippsland Orchid Club.

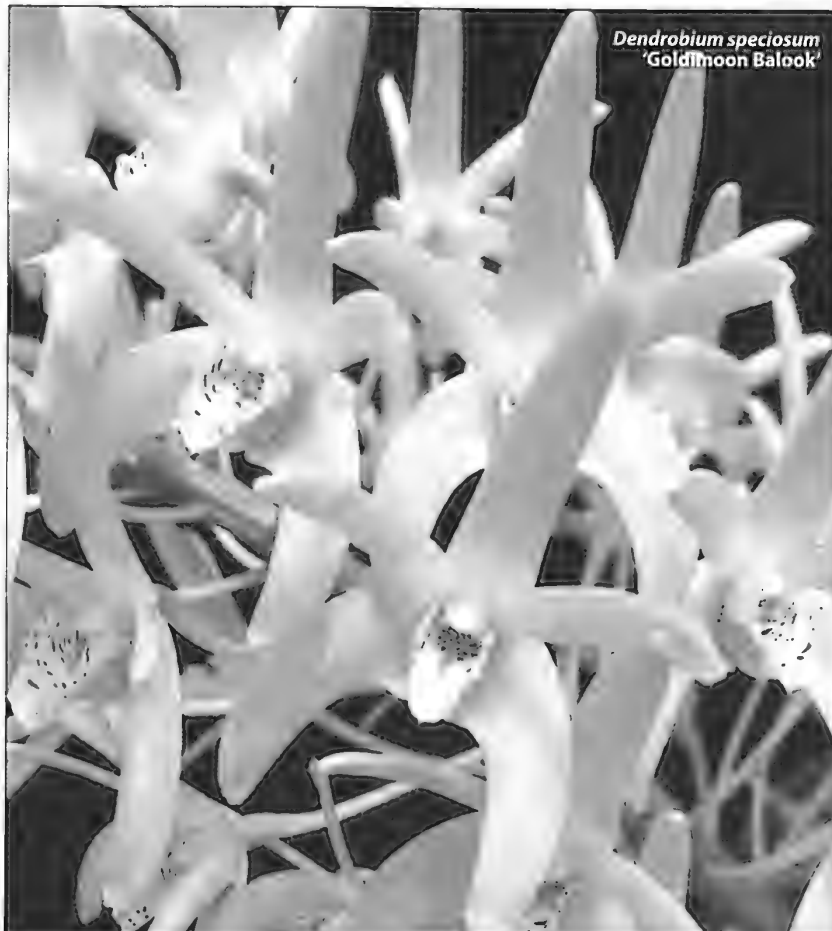
The Australian Native Species Orchid of the Year (Sponsored by the Yarra Valley Orchid Society) went to ***Dendrobium speciosum 'Goldimoon Balook'***, owned and grown by Chris Pegg. A cross between the subspecies *speciosum* and *curvicaule*.

Cymbidium Hybrid Orchid of the Year (Sponsored by the Cymbidium Orchid Society of Victoria) was won by David Wain for his ***Cymbidium Templestowe's Charm 'Julie'***.

Laeliinae Hybrid Orchid of the Year (Sponsored by the Mid-Murray Orchid Club) went to ***Rhyncattleanthe Burgundy Beauty 'Castle Creek'***, exhibited by Castle Creek Orchids.



Dendrobium speciosum
'Goldmoon Balook'



Dendrobium speciosum
'Goldmoon Balook'

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AOB 143



Rhyncattleanthe
Burgundy Beauty
'Castle Creek'

Oncidium
Phoenix Flight
'Beenak'



Oncidiinae Hybrid Orchid of the Year (Sponsored by the Bendigo Orchid Club) and Seedling of the Year - The Memoria Harold and Florence Coker Award (Sponsored by Frances & Julian Coker) went to Clive & Agi Halls of Mt. Beenak Orchids from Yarra Valley Orchid Society for *Oncidium* Phoenix Flight 'Beenak', who also bred this orchid hybrid.

Masdevallia Hybrid Orchid of the Year (Sponsored by the Warrnambool and District Orchid Society) went to *Masdevallia* Rein Touch 'PDG' owned and grown by Marita Anderson.

Paphiopedilum Hybrid Orchid of the Year (Sponsored by the Ballarat Orchid Society) went to *Paphiopedilum* Saint Swithin 'Swizzlesticks' owned and grown by Michael Coker.

Any Other Hybrid Orchid of the Year (Sponsored by the North East Melbourne Orchid Society) went to *Fredclareara* After Dark 'Edward', owned and grown by Michael Coker from NEMOS.

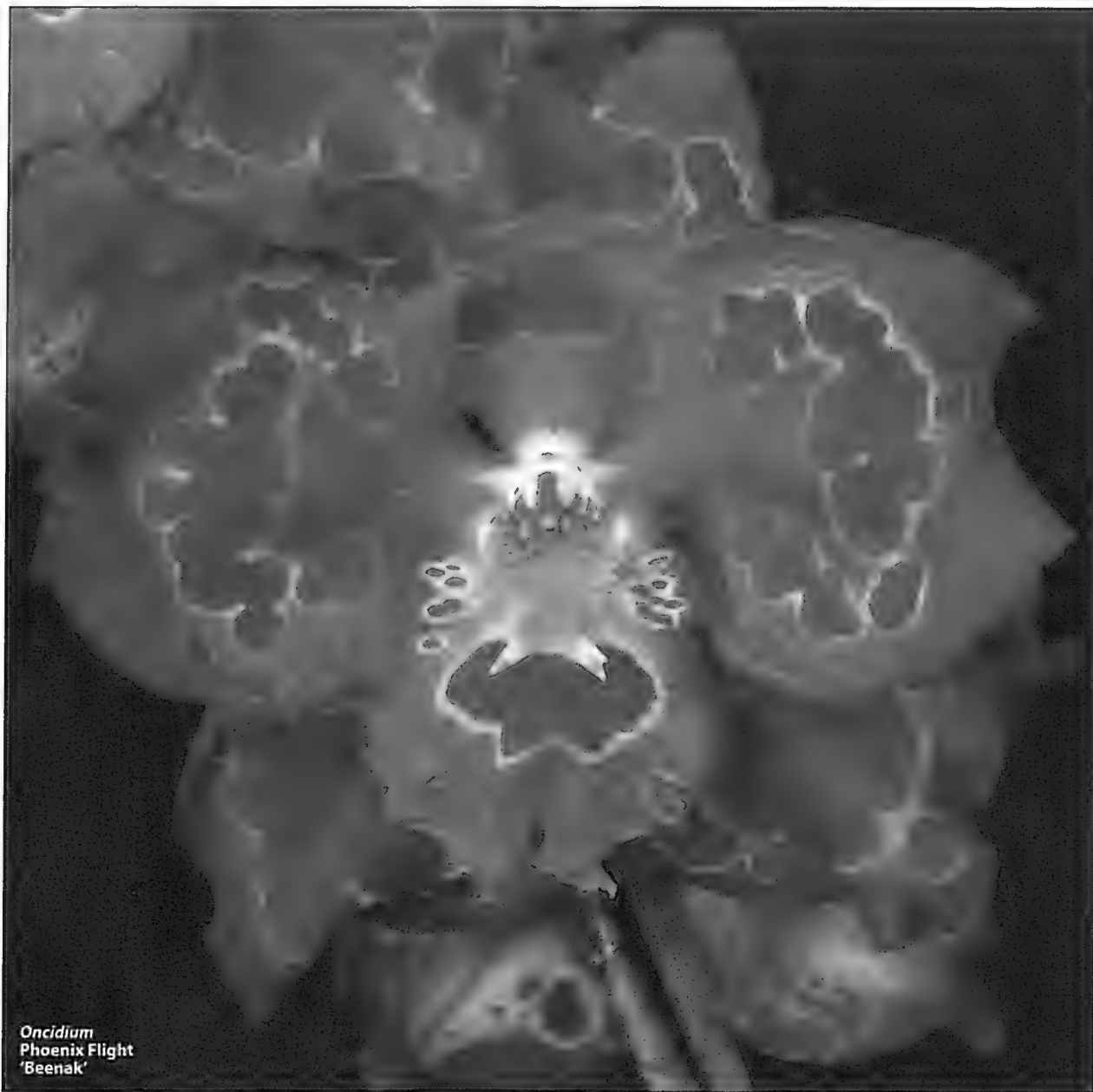
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AOR 001

AOR 124



Paphiopedilum
Saint Swithin
'Swizzlesticks'

Fredclarkara
After Dark
'Edward'



Paphiopedilum Species Orchid of the Year (Sponsored by the Stawell Orchid Society) was another of Michael Coker's plants, *Paphiopedilum delenatii* forma album 'Snowman'.

The Gerald McCraith Award for Species Orchid of the Year (Sponsored by the Orchid Species Society of Victoria) went to *Dendrobium aphyllum*, owned and grown by Pam & Gordon Young of NEMOS.

Best Cultured Species Orchid of the Year (Sponsored by Maroondah Orchid Society) went to *Oncidium sotoanum* 'Bruce', owned and grown by Craig & Fiona Miles of Ballarat Orchid Society.

Each VOOTY category winner receives a framed picture of their winner, including a plaque and medallion. The pictures are presented at the annual OSCOV dinner which is held in conjunction with the OSCOV Show in August.

Michael Coker
President, OSCOV

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Fred Clarkeara
After Dark
'Edward'



Paphiopedilum delenatii
forma album
'Snowman'



Dendrobium aphyllum



Six new species of *Plumatichilos* (Orchidaceae: Pterostylidinae) from South-eastern Australia and a new species from New Zealand

by David L. Jones

Abstract

Plumatichilos extensus, *P. foliaceus*, *P. multisignatus*, *P. stramineus*, *P. unicornis*, five new species all from south-eastern Australia with affinities to *P. plumosus* (Cady) D.L.Szlachetko and *P. petiolatus*, also from south-eastern Australia but with affinity to the western species *P. facetus* D.L.Jones & C.J.French, are described as new. The opportunity is also taken to describe the new species, *Plumatichilos singularis*, from New Zealand.

Key Words

Orchidaceae, *Plumatichilos extensus*, *Plumatichilos facetus*, *Plumatichilos foliaceus*, *Plumatichilos multisignatus*, *Plumatichilos petiolatus*, *Plumatichilos plumosus*, *Plumatichilos stramineus*, new species, South Australia, Victoria, Tasmania, Australian flora; also *Plumatichilos singularis*, *Plumatichilos tasmanicus*, New Zealand flora.

Introduction

Plumatichilos is a distinctive monophyletic genus that was erected in 2001 (Szlachetko 2001) based on a study of herbarium specimens. Comprehensive parallel research undertaken by Australian researchers and using a wide range of morphological characters obtained from fresh material also produced results that supported the segregation of *Plumatichilos* from *Pterostylis* (Jones & Clements 2002). Their results were based on the following combination of characters:-

- sterile and fertile plants monomorphic
- clonal colonies absent
- leaves sessile, ascending to erect, often with whitish or yellowish interveinal areas
- ovary strongly asymmetrical
- flower with two galea openings
- lateral sepals deflexed
- synsepalum with a thickened basal pad
- petals narrow with a filiform apex
- labellum fully exposed in both the set and triggered position
- labellum lamina filiform, bearing two or three types of hairs, long moniliform yellow hairs that are very prominent mixed with fine yellow hairs and sparse short thin white hairs at the labellum base
- labellum lamina with an insectiform apical structure and basal appendage consisting of a short beak-like structure
- column foot absent
- barrier trichomes present, unbranched, filiform.



Plumatichilos extensus
Chewton, Vic
(Dean Rouse)

Continuing studies into *Plumatichilos* have revealed six new species in south-eastern Australia which are described here as new. This follows the recent recognition and naming of other new species in the genus (Jones 2015, 2016, Jones & French 2017a,b,c). A further new species from New Zealand, located while studying herbarium specimens at AK, is also described here as new.

Materials and Methods

The descriptions and drawing of the majority of these new taxa were made from fresh specimens and compared with fresh and dried specimens of *P. plumosus* from sites in New South Wales, including the type locality. The description of the New Zealand species was compiled from herbarium material. Unless otherwise indicated, all types of *Plumatichilos* relevant to this study (or photographs thereof), and collections cited, have been seen by me.

Taxonomy

1. *Plumatichilos extensus* D.L.Jones, sp. nov.
With affinity to *Plumatichilos plumosus* (Cady) Szlachetko but differing by its narrower flowers (6-7 mm across cf. 8-10 mm across in *P. plumosus*) with a slender drawn-out or stretched appearance (obvious in side view) that are tapered to a sharp drawn out apex, (plump flowers in *P. plumosus* with the apex curved sharply forwards), longer lateral sepals (22-30 mm long cf. 22-25 mm long in *P. plumosus*), longer petals (25-30 mm long cf. 22-25 mm long in *P. plumosus*), and a longer labellum (18-23 mm long cf. 14-17 mm long in *P. plumosus*).

Type: Victoria. Eastern Highlands; Weres Paddock, Greensborough, 2 October 1966, D.L.Jones & B.E.Mentiplay (holo CANB 643397).

Illustrations: Page 177, Jeanes & Backhouse (2006), as *Pterostylis* sp. aff. *plumosa* 1, Woodland Bearded Greenhood; page 12-13, *Plumatichilos* section, Bates 2008-2018, as *Plumatichilos* sp., Large Bearded Greenhood.

Description: *Sterile rosette* with 6-12 leaves, spreading; petiole absent or indistinct, 0-5 mm long; lamina ovate to elliptical, 8-20 mm long, 3-5 mm wide, green, sometimes with paler interveinal areas at the base, margins entire, apex acute to acuminate. *Fertile plants* 15-25(-35) cm tall. *Cauline leaves* 11-15, obliquely erect to erect, sessile and sheathing, rarely petiolate; basal leaves mostly sessile and sheathing, sometimes petiolate, loosely crowded in an extended rosette; upper leaves bract-like, sessile, closely appressed to the stem; lamina elliptical, 15-35 mm long, 3-12 mm wide, dark green, sometimes with some translucent interveinal areas; leaf base petiolate or stem-clasping; margins entire; apex acute to acuminate. *Scape* smooth. *Ovary* 5-8 mm long, green, smooth, asymmetric. *Flower* solitary, leaning forwards, 42-50 mm long, 6-8 mm across, translucent white with darker green veins, shiny; petals and sepaline pad dark green or brownish. *Galea* widest at the base when viewed from the front and narrowed upwards, constricted just above the middle; from the side nearly straight or with a shallow concavity, curved shallowly forwards in distal third, ending in a curved apical point. *Dorsal sepal* 28-34 mm long including the apical point, 14-18 mm wide when flattened, laterally inflated near the base then gradually tapered, ending in an acute point 3-4 mm long, translucent with prominent darker green longitudinal veins and finer transverse and reticulate veins. *Lateral sepals* deflexed, 22-30 mm long; conjoined part 6-10 mm long, 3-4 mm wide, central pad raised and shallowly mounded, dark green, more or less papillate, margins green, infolded; free points closely parallel to slightly divergent, 15-20 mm long, thickish, linear, tapered near the apex, green, distal margins infolded, apex subacute. *Petals* 25-30 mm long, base straight, narrowed and curved in the proximal third; basal part 8-10 mm long, 2-2.5 mm wide, dark green with translucent

interveinal areas; basal flange vestigial; distal part 15-20 mm long, filiform. *Labellum* porrect, 16-18 mm long, straight at the base then remaining straight or shallowly curved, projecting forwards through the basal frontal opening. *Labellum hinge* c. 2.5 mm long, white. *Labellum lamina* green to greenish brown; basal beak ovate-elliptic, c. 3 mm long, c. 1 mm across, surface rugose; lamina linear-filiform 10-13 mm long, c. 0.3 mm wide; apical knob quadrangular, c. 2.5 mm long, 1.5 mm wide, dark reddish brown, the lamina extending as a short dorsal hook. *Labellum hairs* of three types; white hairs on basal beak c. 1 mm long; fine yellow hairs restricted to the proximal part of the lamina, held more or less erect to spreading in two rows on the dorsal side of the lamina, c. 1.5 mm long; coarse pale yellow hairs numerous, crowded over most of the lamina (16-25 pairs, 4-5 mm long) arising from the labellum margins and projecting forwards in several directions. *Column* 15-18 mm long, nearly straight at the base then erect or slightly leaning forwards, light green and white, broadest just near the base of the column wings. *Column wings* projected forwards, 4-6 mm long, 3-3.5 mm wide, shark fin-shaped, translucent white; basal lobe downcurved, c. 3 mm long, 1 mm wide, obtuse, inner margins incurved, adorned with short, white, tangled cilia; mid-section c. 3 mm long, translucent green; apical lobe narrowly linear, 4-5 mm long, strongly irregular. *Anther* c. 3 mm long, with a short peaked rostrum. *Pollinia* oblong-clavate, c. 2.8 mm long, yellow, mealy. *Stigma* central, elliptical to scutiform, 7-9 mm long, 3 mm wide, raised. *Capsule* not seen. **Fig. 1.**



Plumatichilos extensus
Keith, SA
(June Niejalke)

Distribution and ecology: Western Victoria, more or less west from the north-eastern suburbs of Melbourne, such as Greensborough, extending over the border into south-eastern South Australia.

Recognition: Characterised by its large narrow flower that appears as if it has been stretched. This feature is obvious in side view but the flower is also narrow in frontal view. It also has a galea that tapers sharply to a drawn-out apex, long lateral sepals and a long densely hairy labellum with a large brown apical knob.

Similar species: *Plumatichilos extensus* has been commonly confused with *P. plumosus* but that species has dumpy flowers which are shorter, but broader and with a prominently swollen base on the galea (obvious in frontal view). The apex of the galea of *P. plumosus* typically arches forwards in a steep curve (often nearly at right angles to the dorsal surface) and ends in a short thick point. Additionally, the lateral sepals, petals and labellum are shorter than those of *P. extensus*.

Notes: Bates (2008-2018) erroneously equates this species with *P. foliaceus*, which is endemic to SA, and complicates the issue by using overlapping common names for both taxa. *Plumatichilos foliaceus* is much more robust than *P. extensus* and is also distinguished by its larger, light green, oblong-elliptical leaves, smaller plumper flowers that are noticeably swollen at the base (in frontal view) and a shorter labellum. The longer, narrower flowers of *P. extensus* have a more slender and drawn-out or stretched appearance that is apparent when viewed from the side.

Etymology: The Latin *extensus*, extended, stretched out, in reference to the slender flowers which have the appearance of being stretched out or extended when compared with *P. plumosus*.

Other specimens: Vic. Mt Pilot, 11 Oct. 1989, *P. Branwhite* (DLJ 5239) (CANB); McDonald Park, Ararat, 20 Oct. 1989, *P. Branwhite* (DLJ 5325) (CANB); Ironbark Reserve, Stawell, 8 Oct. 1990, *P. Branwhite* (CANB); Diamond Hill, Bendigo, 19 Oct. 1992, *P. Branwhite* (DLJ 10356) (CANB); Goltons Gorge, 21 Oct. 1992, *P. Branwhite* (DLJ 10434) (CANB); Deep Lead, 18 Sep. 1993, *P. Branwhite* (CANB).

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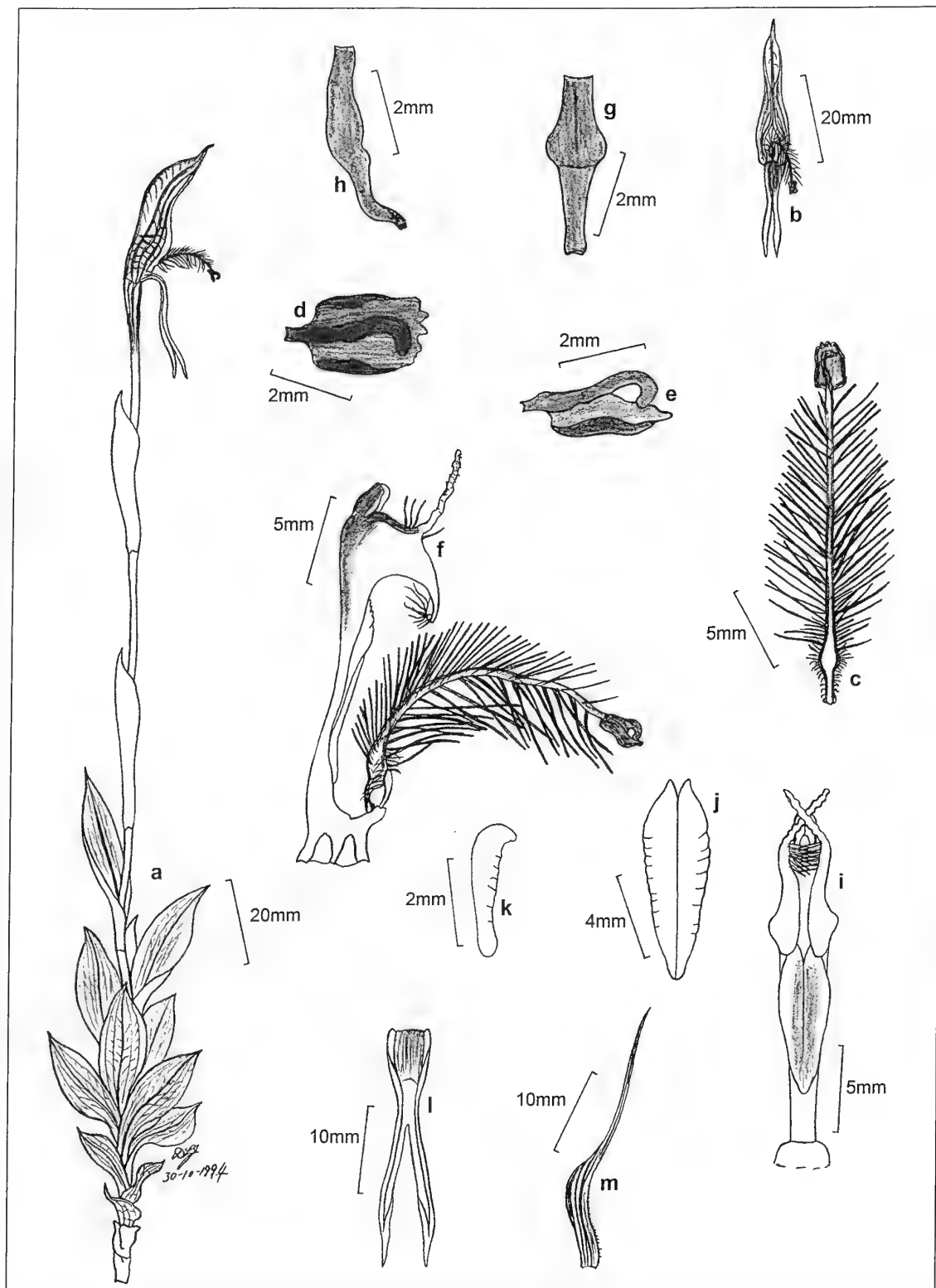
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***Plumatichilos extensus*, Keith, SA, D.Rouse. (Fig. 1.)**

a. flowering plant; b. flower from front; c. labellum from above; d. labellum apical knob from above; e. labellum apical knob from side; f. column and labellum from side; g. basal beak of labellum from above; h. basal beak of labellum from side; i. column from front; j. stigma; k. pollinium; l. synsepalum; m. petal.

Drawing: 30-10-1994, © David L. Jones.

2. *Plumatichilos foliaceus* D.L.Jones, *sp. nov.*

With affinity to *Plumatichilos plumosus* (Cady) Szlachetko but differing by its much taller habit (to 35 cm tall *cf.* to 20 cm tall in *P. plumosus*) and broader (to 14 mm wide), light green oblong-elliptical cauline leaves with a mucronate apex (to 8 mm wide, linear-tapered, dark green with an acuminate apex in *P. plumosus*),

Type: South Australia. Alligator Gorge National Park, c. 6.8 km along Circle Track, Flinders Ranges, 5 September 1999, D.L.Jones 16704 & M.Garratt (holo CANB 607295).

Illustration: page 6-7, *Plumatichilos* section, Bates 2008-2018, as *Plumatichilos* sp., Common or Woodland Plumed Orchid.

Description: *Sterile rosette* with 8-16 leaves, spreading; leaves sessile; lamina oblong to oblong-elliptic, 12-30 mm long, 4-6 mm wide, green, sometimes with paler interveinal areas at the base, margins entire, apex acute to mucronate. *Fertile plants* 15-35 cm tall. *Cauline leaves* 12-23, obliquely erect to erect, sessile and sheathing; basal leaves crowded in an extended rosette; upper leaves bract-like, scattered and closely appressed to the stem; lamina oblong-elliptical, 15-50 mm long, 5-14 mm wide, light green with some translucent interveinal areas at the base; leaf base stem-clasping; margins entire; apex mucronate. *Scape* smooth. *Ovary* 8-12 mm long, green, smooth, asymmetric. *Flower* solitary, erect to leaning forwards, 40-45 mm long, 7-9 mm across, translucent white with darker green veins, shiny; petals and sepaline pad dark green. *Galea* widest at the base when viewed from the front and narrowed upwards, constricted suddenly in the distal three-quarters; from the side nearly straight, curved forwards in distal third, ending in a curved apical point. *Dorsal sepal* 28-32 mm long including the apical point, 16-20 mm wide when flattened, laterally inflated near the base then gradually tapered, ending in an acute point 2-4 mm long, translucent with subtle darker green longitudinal veins and finer transverse and reticulate veins. *Lateral sepals* obliquely deflexed to deflexed, 20-30 mm long; conjoined part 9-12 mm long, 3-4 mm wide, central pad raised and shallowly mounded, dark green, more or less papillate, margins green, infolded; free points nearly parallel to slightly divergent, 10-15 mm long, linear-tapered, green, distal margins infolded, apex subobtuse. *Petals* 23-30 mm long, base straight, curved suddenly in the distal third; basal part 10-12 mm long, 2-2.5 mm wide, dark green with translucent interveinal areas; basal flange small; distal part 15-22 mm long, linear-tapered, apex acuminate. *Labellum* porrect, 16-22 mm long, straight at the base then shallowly curved and projecting forwards through the basal frontal opening. *Labellum hinge* c. 1.5 mm long, white. *Labellum* greenish brown; basal beak ovate, c. 3 mm long, c. 2 mm across, surface transversely rugose; lamina linear-filiform 10-13 mm long, c. 0.6 mm wide; apical knob quadrangular, c. 2 mm long, 2 mm wide, dark reddish brown, the lamina extending as a short dorsal hook. *Labellum hairs* of three types; white hairs on basal beak c. 1 mm long; fine yellow hairs restricted to the proximal part of the lamina, held more or less erect to spreading in two rows on the dorsal side of the lamina, c. 1.5 mm long; coarse

pale yellow hairs numerous, crowded over most of the lamina (16-22 pairs, 5-7 mm long) arising from the labellum margins and projecting in several directions. *Column* 16-20 mm long, nearly straight at the base then erect or slightly leaning forwards, light green and white, broadest just near the base of the column wings. *Column wings* projected forwards, 5-7 mm long, 3-4 mm wide, shark fin-shaped, translucent white; basal lobe downcurved, c. 4.5 mm long, 1.2 mm wide, obtuse, inner margins incurved, adorned with short, white, tangled cilia; mid-section c. 3.5 mm long, translucent green; apical lobe narrowly linear, 4-5 mm long, irregular. *Anther* c. 3 mm long, with a short peaked rostrum. *Pollinia* oblong-clavate, c. 3.5 mm long, yellow, mealy. *Stigma* central, elliptical to scutiform, 8-10 mm long, 3 mm wide, raised. *Capsule* not seen. **Fig. 2.**



Distribution and ecology: Endemic in South Australia where locally common in the Mount Lofty Ranges, Flinders Ranges and Yorke Peninsula. It grows on slopes, ridges and gullies in shrubby or heathy woodland in freely draining brown loams and schists. Flowering late August to October.

Recognition: Characterised by its tall habit and large clustered relatively thin-textured light green cauline leaves which are elliptical in shape and taper suddenly to a short mucronate apex. The shiny flowers are less boldly striped than other SA species, the dorsal sepal usually has a short apical point and the lateral sepals tend to curve out in front of the ovary.

Similar species: *Plumatichilos plumosus* is a shorter-growing species with much narrower leathery deep green leaves that are linear-tapered in shape with the apex drawn out into an acuminate point and the flowers dull rather than shiny and prominently marked with darker veins.

Note: The overlapping application of common names may lead to this species being confused with *P. extensus* (Bates 2008-2018). Both taxa are morphologically distinct. For more details see the Notes section in the *P. extensus* entry.

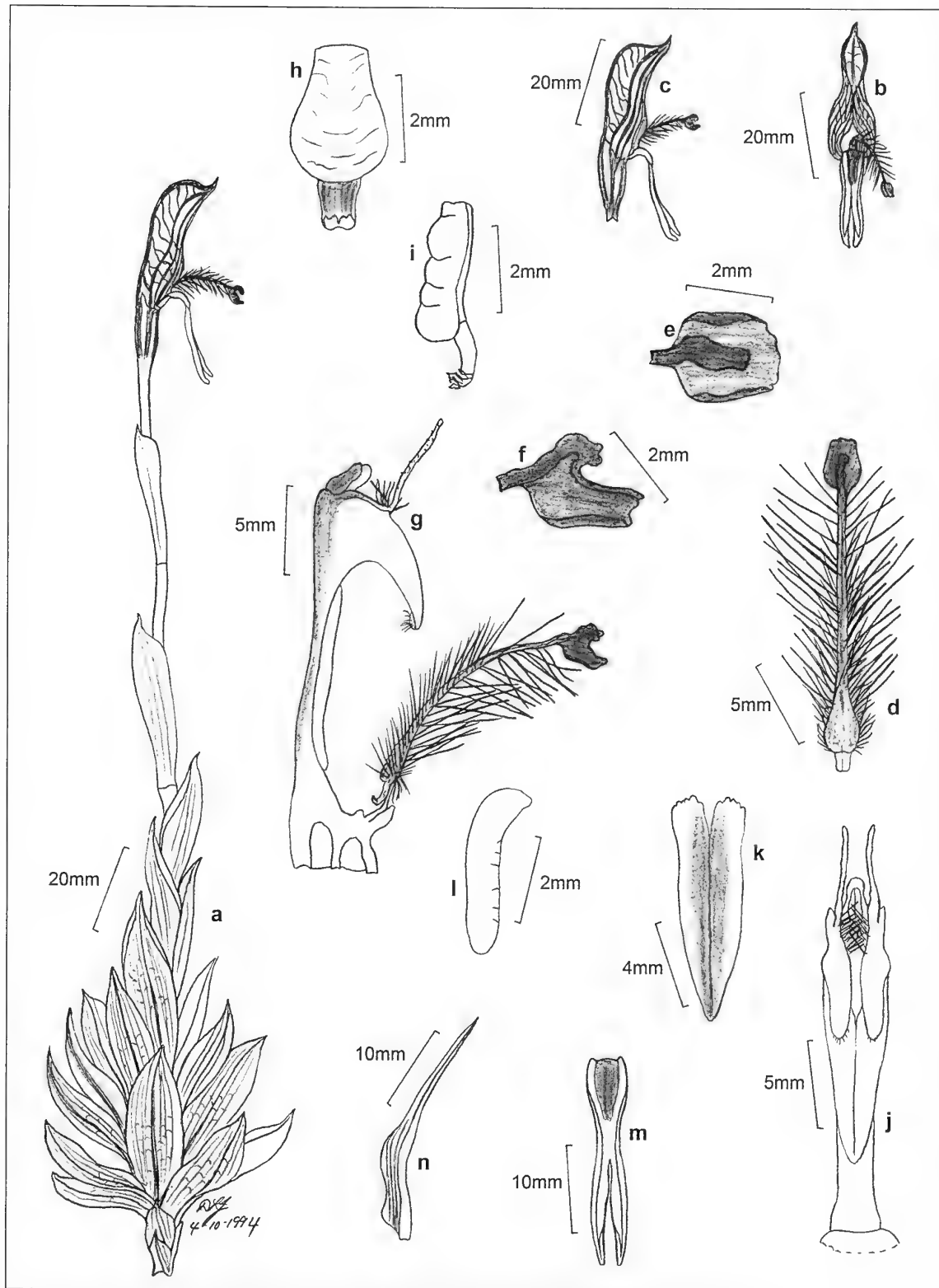
Etymology: The Latin *foliaceus*, leafy, in reference to the large cauline leaves on this robust species, probably the largest leaves in the genus.

Other specimens: South Australia: Scott Creek, near Almanda Mine, 19 Sep. 1993, *R.Bates* 34051 (CANB); Hawker Hill, 25 Oct. 1996, *R.Bates* 45195 (CANB 628738); Scott Creek Conservation Park, 21 Oct. 1992, *P.Branwhite* (DLJ 10421) (CANB); Messent, 4 Oct. 1994, *P.Branwhite* (DLJ 13446) (CANB); Alligator Gorge, 30 Sep. 1986, *M.A.Clements* 4313 (CANB); Alligator Gorge National Park, end of Mambray Creek Fire Trail, c. 1.5 km from Blue Gum Camp, *D.L.Jones* 16710A & *M.Garratt* (CANB 607302); Watts Gully, adjacent to Warren Conservation Park, 8 Sep. 1999, *D.L.Jones* 16786, *M.Garratt* & *R.Bates* (CANB 606681); Newland Head Conservation Park, 28 Sep. 1994, *D.E.Murfet* 2041 (CANB); Myponga Conservation Park, 20 Sep. 1996, *D.E.Murfet* 2529 (CANB); Ashville South, 2 Oct. 1998, *D.E.Murfet* 3333 (CANB); Tothill Ranges, near Webb Gap, 20 Sep. 1998, *D.E.Murfet* 3285 (CANB); 8 miles from Wilmington towards Alligator Gorge, 4 Sep. 1973, *P.Ollerenshaw* & *E.Richards* (CANB).

Plumatichilos foliaceus
Humbag Scrub, SA
(June Niejalke)



Plumatichilos foliaceus
leaves, Scott Creek, SA
(Robert Bates)



***Plumatichilos foliaceus*, Messent, SA, P. Branwhite (DLJ 13446). (Fig. 2.)**

a. flowering plant; b. flower from front; c. flower from side; d. labellum apical knob from above; e. labellum apical knob from top; f. labellum apical knob from side; g. column and labellum from side; h. basal beak of labellum from above; i. basal beak of labellum from side; j. column from front; k. stigma; l. pollinium; m. synsepalum; n. petal.

Drawing: 4-10-1994, © David L. Jones.

3. *Plumatichilos multisignatus* D.L.Jones, *sp. nov.*

With affinity to *Plumatichilos plumosus* (Cady) Szlachetko but differing by its smaller, shiny rosette leaves, paler, forward-leaning, narrower flowers which are very strongly marked with dark green veins, the galea tapered to a narrow suberect apex ending in a thin tapered point (plump flowers in *P. plumosus* with the galea apex arching forwards in a steep curve (often nearly at right angles to the dorsal surface), the apex ending in a thick point), thinner petals, more densely hairy labellum and broadly scutiform stigma (narrowly elliptical in *P. plumosus*).

Type: Victoria. c. 6 km south of Kiata, quarry site, 19 September 1990, D.L.Jones 6552 (holo CBG 9016017, iso MEL).

Illustration: Page 177, Jeanes & Backhouse (2006), as *Pterostylis* sp. aff. *plumosa* 2, Mallee Bearded Greenhood; page 2-3, *Plumatichilos* section, Bates 2008-2018, as *Plumatichilos* sp., Mallee Bearded Greenhood.

Description: *Sterile rosette* with 8-12 leaves, spreading, fleshy; petiole indistinct to well developed, 0-7 mm long; lamina elliptic, 5-20 mm long, 4-10 mm wide, green with darker veins, margins entire, apex acute to acuminate. *Fertile plants* 10-20 cm tall. *Cauline leaves* 8-15, obliquely erect to erect, fleshy, sessile and sheathing; basal leaves crowded in an extended rosette; upper leaves bract-like, well spaced and closely appressed to the stem; lamina oblong-elliptic to elliptic, 15-40 mm long, 5-10 mm wide, light green with numerous translucent interveinal areas; leaf base stem-clasping; margins entire; apex acute to shortly acuminate. *Scape* smooth. *Ovary* 5-7 mm long, green, smooth, asymmetric. *Flower* solitary, leaning forwards, 36-42 mm long,

8-10 mm across, translucent white, strongly marked with darker green veins, shiny; petals and sepaline pad dark green. *Galea* widest at the base when viewed from the front and narrowed upwards, constricted suddenly in the distal three-quarters; from the side nearly straight, curved forwards in distal third, ending in a straight or curved apical point. *Dorsal sepal* 28-34 mm long including the apical point, 16-19 mm wide when flattened, laterally inflated near the base then gradually tapered, ending in an acute point 3-4 mm long, translucent, strongly marked with darker green longitudinal veins and finer transverse and reticulate veins. *Lateral sepals* deflexed, 24-30 mm long; conjoined part 7-9 mm long, 3-4 mm wide, central pad raised and shallowly mounded, dark green, papillate, margins green, infolded; free points nearly parallel to slightly divergent, 12-18 mm long, linear-tapered, thickish, green, distal margins infolded, apex subobtusate. *Petals* 20-28 mm long, nearly straight to shallowly falcate; basal part 7-10 mm long, c. 2 mm wide, dark green with translucent interveinal areas; basal flange small; distal part 15-20 mm long, linear-tapered, apex acuminate. *Labellum* porrect, 16-20 mm long, straight at the base then shallowly curved and projecting forwards through the basal frontal opening. *Labellum hinge* c. 1.5 mm long, white. *Labellum lamina* yellowish; basal beak ovate, c. 4 mm long, c. 1.8 mm across, surface irregularly rugose; lamina linear-filiform 10-14 mm long, c. 0.7 mm wide; apical knob quadrangular to transversely ovate, c. 3 mm long, c. 3-4 mm wide, dark reddish brown, the lamina extending as a short irregular structure. *Labellum hairs* of two types; fine yellow hairs restricted to the basal beak and proximal part of the lamina, held more or less erect to spreading in two rows on the dorsal side of the lamina, c. 1.2 mm long; coarse pale yellow to bright yellow hairs numerous, crowded over most of the lamina (16-22 pairs, 5-8 mm long) arising from the labellum margins and projecting in several directions. *Column* 15-18 mm long, nearly straight at the base then erect or slightly leaning forwards, green and white, broadest just near the base of the column wings. *Column wings* projected forwards, 4-5 mm long, 2-3 mm wide, shark fin-shaped, translucent white; basal lobe downcurved, c. 4 mm long, 1.5 mm wide, obtuse, inner margins incurved, adorned with short, white, tangled cilia; mid-section c. 3.5 mm long, translucent green; apical lobe narrowly linear, 4-5 mm long, irregular. *Anther* c. 2.8 mm long, with a short peaked rostrum. *Pollinia* oblong-clavate, c. 2.5 mm long, yellow, mealy. *Stigma* central, elliptical to scutiform, 8-10 mm long, 3.5 mm wide, raised. *Capsule* not seen. **Fig. 3.**



Plumatichilos multisignatus
Mt Boothby CP, SA
(June Nijelke)

Distribution and ecology: North-western Victoria and South Australia, where widely distributed from coastal cliffs inland to the plains but not in the drier parts of the wheat belt or the mountains. It extends west as far as the Eyre Peninsula and is also reported from Kangaroo Island (Bates 2008-2018). Commonly grows in mallee and mallee-broombush communities but also in open forest, heathy forest and heathland in freely draining sands, laterite and loams; also among shrubs on coastal limestone cliffs. Flowering Late August to October.

Recognition: Characterised by its distinctive pale translucent flowers that are boldly marked with a network of thick dark green veins, these veins sometimes becoming reddish or brownish in bright sunny situations. The flowers lean strongly forwards and are narrow with the distal parts of the galea tapered to a narrow suberect apex which ends in a thin tapered curved point. The labellum of this species often protrudes stiffly without drooping much and the hairs are also denser and noticeably brighter yellow than other species.

Similar species: This species has been included with *P. plumosus* which has less colourful and much less strongly marked plumper flowers with the galea apex curved sharply forwards (often nearly at right angles), the apex ending in a thick point.

Etymology: The Latin *multus*, many, *signatus*, marks, as though covered with writing, referring to the strong dark markings on the flowers of this species.

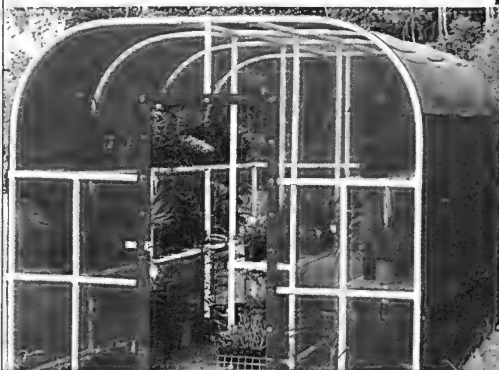
Other specimens: Vic. Private property near Kiata Reserve, 28 Sep. 1989, *P. Branwhite* (DLJ 5234) (CANB). SA. Tintinara, 10 Oct. 1966, *M. Beek* (CANB); Quorn Flora Reserve, 7 Sep. 1999, *D.L. Jones* 16738 & *M. Garratt* (CANB); c. 6.8 km W of Coonalpyn towards Meningie, 14 Sep. 1999, *D.L. Jones* 16923 & *M. Garratt* (CANB); Wanilla Conservation Park, 7 Sep. 2000, *D.L. Jones* 17415 & *M. Garratt* (CANB); Newland Conservation Park, 25 Sep. 1994, *D.E. Murfet* 2041 (CANB).



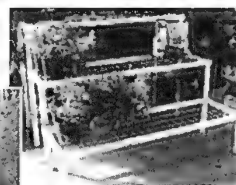
Plumaticillos multisignatus
leaves,
Padthaway CP, SA
(June Niejalke)

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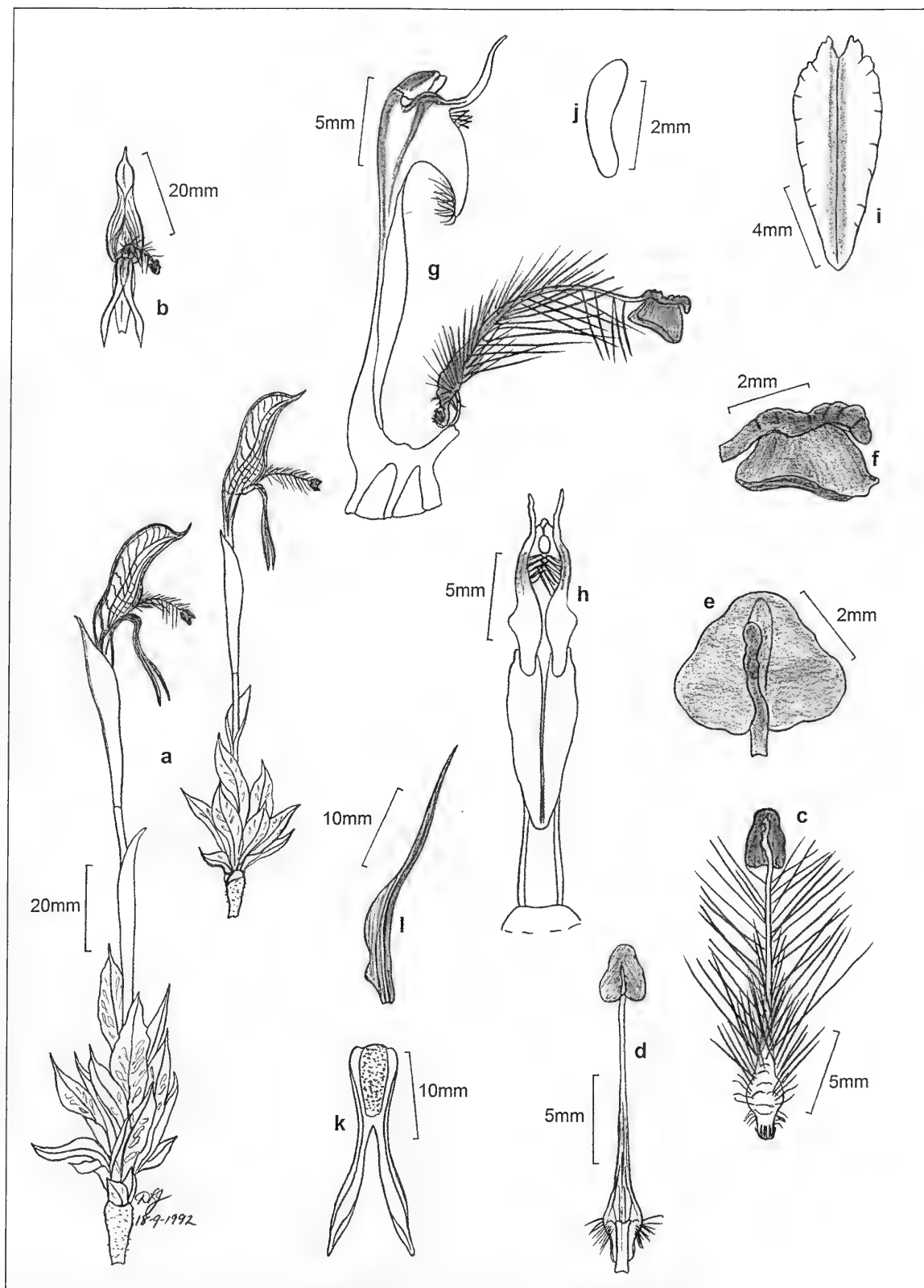
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***Plumatictilos multisignatus*, Kiata, Vic, P.Branwhite (DLJ 10087). (Fig. 3.)**

a. flowering plants; b. flower from front; c. labellum from above; d. labellum lamina, hairs removed; e. labellum apical knob from above; f. labellum apical knob from side; g. column and labellum from side; h. column from front; i. stigma; j. pollinium; k. synsepalum; l. petal.

Drawing: 18-9-1992, © David L. Jones.

4. *Plumatichilos petiolatus* D.L.Jones, *sp. nov.*

With affinity to *Plumatichilos facetus* D.L.Jones & C.J.French but differing by its distinctly petiolate rosette leaves with an ovate to broadly elliptic lamina and acute apex (*cf. sessile*, narrowly elliptic leaves with an acuminate apex in *P. facetus*) and smaller more boldly marked flowers; also with affinity to *P. plumosus* (Cady) Szlachetko but differing by its short stout to dumpy habit, much smaller distinctly petiolate rosette leaves with an ovate to broadly elliptic lamina and acute apex (*cf. sessile*, narrowly elliptic leaves with an acuminate apex in *P. plumosus*), forward-leaning smaller flowers (25-30 mm long *cf. 35-45* mm long in *P. plumosus*), petals marked with purple-brown lines (green in *P. plumosus*) and a shorter (11-13 mm long *cf. 14-22* mm long in *P. plumosus*) less hairy labellum.

Type: South Australia. Eyre Peninsula, Yeldulknie Conservation Park, 8 km W of Cleve towards Mangalo, 6 Sep. 2000, D.L.Jones 17334 & M.Garratt (holo CANB 622370, iso AD, MEL).

Illustration: page 4-5, *Plumatichilos* section, Bates 2008-2018, as *Plumatichilos* sp., Small Eyre Peninsula Plumed Orchid.

Description: *Sterile rosette* with 5-9 leaves, spreading; petiole well developed, 2-12 mm long; lamina ovate to broadly elliptic, 6-15 mm long, 3-8 mm wide, green, margins entire, apex acute. *Fertile plants* 6-16 cm tall. *Cauline leaves* 8-12, obliquely spreading to obliquely erect, most leaves petiolate; basal leaves often in a distinct rosette or in a loose basal group, usually petiolate; upper two or three leaves sessile and bract-like, loosely appressed to the stem; lamina oblong, ovate or elliptical, 10-35 mm long, 3-10 mm wide, dark green, sometimes with some translucent interveinal areas; leaf base petiolate or stem-clasping; margins entire; apex acute. *Scape* smooth. *Ovary* 4-7 mm long, green, smooth, asymmetric. *Flower* solitary, leaning forwards, 25-30 mm long, 5-7 mm across, translucent yellowish white with prominent darker green veins, shiny; petals and sepaline pad brown to purple brown (occasionally green). *Galea* widest at the base when viewed from the front and narrowed upwards, constricted just above the middle; from the side nearly straight, curved forwards in distal third, ending in a curved apical point. *Dorsal sepal* 22-26 mm long including the apical point, 13-16 mm wide when flattened, laterally inflated near the base then gradually tapered, ending in an acute point 1-3 mm long, translucent with prominent darker green longitudinal veins and finer transverse and reticulate veins. *Lateral sepals* deflexed, 15-20 mm long; conjoined part 5-7 mm long, 3-4 mm wide, central pad raised and shallowly mounded, dark green, more or less papillate, margins green, infolded; free points closely parallel to narrowly divergent, 9-13 mm long, thickish, linear, tapered near the apex, green, distal margins infolded, apex subobtuse. *Petals* 15-20 mm long, base straight, narrowed and curved in the proximal third; basal part 8-10 mm long, 2-2.5 mm wide, dark green with translucent interveinal areas; basal flange vestigial; distal part 8-10 mm long, filiform. *Labellum* porrect, 11-13 mm long, straight at the base then either remaining straight or shallowly curved, projecting forwards through the basal frontal opening. *Labellum hinge* c. 1.3 mm long, white. *Labellum*

lamina brown to yellowish; basal beak ovate-elliptic, c. 1.8 mm long, c. 1 mm across; lamina linear-filiform 8-11 mm long, c. 0.3 mm wide; apical knob ovate to quadrangular, c. 2 mm long, 1.3 mm wide, dark reddish brown, the lamina extending as a short blunt projection. *Labellum hairs* of two types; fine yellow hairs on the dorsal side toward the labellum base, held obliquely erect in two rows, c. 1-1.5 mm long; coarse yellow hairs over most of the lamina (10-14 pairs, 2-3 mm long) arising from the labellum margins and projecting forwards in several directions. *Column* 12-14 mm long, nearly straight at the base then erect or slightly leaning forwards, light green and white, broadest just near the base of the column wings. *Column wings* projected forwards, 3.5-4 mm long, 3 mm wide, shark fin-shaped, translucent white; basal lobe downcurved, c. 2 mm long, 1 mm wide, obtuse, inner margins incurved, adorned with short, white, tangled cilia; mid-section c. 2.5 mm long, translucent green; apical lobe narrowly linear, 2-3 mm long, irregular. *Anther* c. 1.5 mm long, with a short peaked rostrum. *Pollinia* oblong-clavate, c. 1.6 mm long, yellow, mealy. *Stigma* central, elliptical, 5-6 mm long, 2 mm wide, raised. *Capsule* not seen. **Fig. 4.**



Plumatichilos petiolatus
Wharmindah, SA
(June Niejalke)

Distribution and ecology: South Australia where apparently restricted to the Eyre Peninsula but there widespread and locally common. Grows among whipstick mallee, broombush and other shrubland on the slopes of low hills in red and brown sand, sandy loam and stony soils over clay, laterite and schists. Flowering: Late September and October.

Recognition: Characterised by its short stocky to stout habit, small ovate to broadly elliptic rosette and cauline leaves with a well developed petiole and acute apex, relatively small forward-leaning flowers which are strongly marked with a network of dark green lines, petals marked with purple-brown lines (green in *P. plumosus*) and a relatively short labellum that is not particularly hairy, especially towards the apex.

Similar species: The new species has a similar general appearance to *P. facetus* D.L.Jones & C.J.French from the Esperance-Israelite Bay region in the Roe District of Western Australia. It can be distinguished from that species however, by its distinct rosette and cauline leaves which have an ovate to broadly elliptical lamina with a shortly pointed apex and a well-developed petiole distinct from the lamina (sessile narrowly elliptical leaves with an acuminate apex in *P. facetus*). Its flowers are also smaller and more boldly marked than the western species. The new species has also been linked with *P. plumosus* which can be immediately distinguished by its taller robust habit, thicker scape, larger less boldly striped flowers held more or less erect, green petals and a longer, more densely hairy labellum.

Notes: The general appearance of the flowers and the purple-brown lines on the petals indicate a link between this species and a similar group of species confined to south-western Western Australia (e.g. Jones & French 2017b).

Etymology: The Latin *petiolus*, stalk of a leaf and the suffix *-atus*, possession or belonging, in reference to the presence of distinct petioles on the basal leaves when compared with *P. plumosus*.

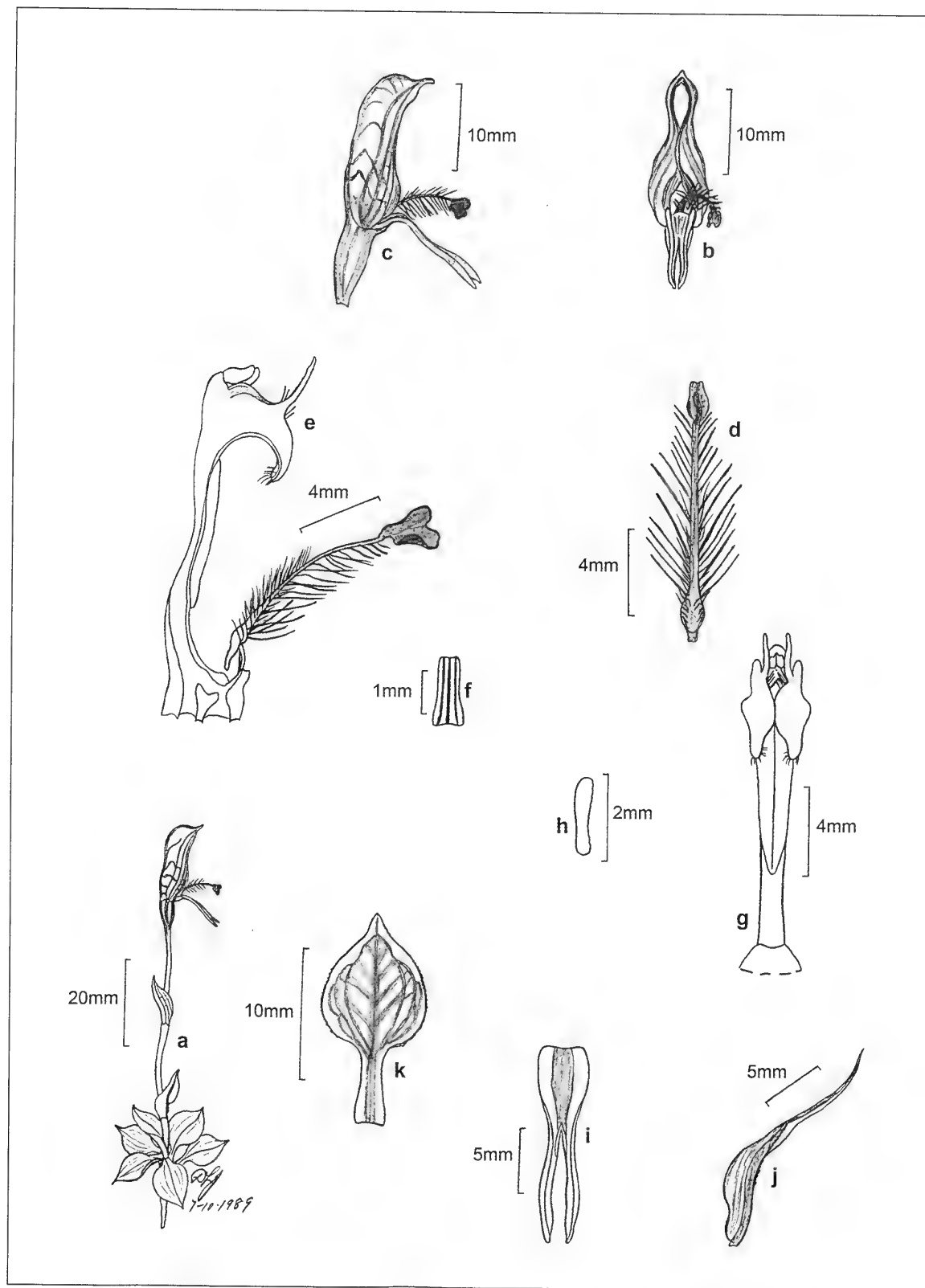
Other collections: South Australia: Near entry to Uley Pumping Station, 35 km NW of Port Lincoln, 29 Sep. 1967, C.R.Alcock (AD, CANB); Curtinye Hill, E of Kimba, 18 Sep. 2000, R.J.Bates 57563 (CANB); Blue Range, NW of Wharminda, SA, 3 Oct. 1986, M.A.Clements 4239 (CANB); cnr Loch-Elliston and Mt Lincoln Rd, 27 Sep. 1986, M.A.Clements 4279 (CANB); Lower NE slope of Darke Peak, 6 Sep. 2000, D.L.Jones 17369 (CANB); 11.2 km from Tumby Bay towards Koppio on Port Lincoln Rd, 7 Sep. 2000, D.L.Jones 17387 & M.Garratt (CANB); Wanilla Conservation Park, c. 4.8 km E of Wanilla, 7 Sep. 2000, D.L.Jones 17415 (CANB); Darke Range Conservation Park, 18 Sep. 1996, D.E.Murfet (CANB); Yeldulknie Conservation Park, 8 Sep. 2016, A.Primier (CANB).



Plumaticillo petiolatus
Cleve Hills
Eyre Peninsula, SA
(Andrew Primer)



Plumaticillo petiolatus
Cleve Hills
Eyre Peninsula, SA
(Andrew Primer)



***Plumaticilos petiolatus*, Kimba-Kyancutta Rd, SA, R.Bates 20617. (Fig. 4.)**

a. flowering plant; b. flower from front; c. flower from side; d. labellum; e. column and labellum from side; f. labellum hinge; g. column from front; h. pollinium; i. synsepalum; j. petal; k. basal leaf.

Drawing: 7-10-1989, © David L. Jones.

5. *Plumatichilos stramineus* D.L.Jones, sp. nov.
 With affinity to *Plumatichilos plumosus* (Cady) Szlachetko but differing by its thicker fleshy leaves, thicker sturdier stem, larger flowers (40-50 mm long cf. 35-45 mm long in *P. plumosus*), longer lateral sepals (23-28 mm long cf. 22-25 mm long in *P. plumosus*) and longer labellum (15-20 mm long cf. 14-17 mm long in *P. plumosus*) with pale yellow to straw-coloured hairs.

Type: Tasmania. Blackmans Bay, 9 Nov. 1994, D.L.Jones 13678, J.E. ϕ A. Wapstra (holo CANB 648106).

Illustration: Page 236, Jones *et al.* (1999), as *Pterostylis plumosa*.

Description: Sterile rosette with 6-12 leaves, spreading; petiole absent or indistinct, 0-2 mm long; lamina elliptical, 10-20 mm long, 3-7 mm wide, green, margins entire, apex acute. Fertile plants 15-25 cm tall. Cauline leaves 12-16, obliquely spreading to obliquely erect, sessile and sheathing; basal leaves in a loosely ascending basal group; upper leaves bract-like, appressed to the stem; lamina oblong to oblong-elliptical, 15-45 mm long, 5-12 mm wide, dark green, sometimes with some translucent interveinal areas; leaf base stem-clasping; margins entire; apex acute to acuminate. Scape smooth. Ovary 7-10 mm long, green, smooth, asymmetric. Flower solitary, erect or leaning forwards, 40-50 mm long, 9-12 mm across, translucent white with darker green veins, shiny; petals and sepaline pad dark green. Galea widest at the base when viewed from the front and narrowed upwards, constricted in the distal two-thirds; from the side nearly straight or with a shallow concave area, curved forwards in distal third, ending in a curved apical point. Dorsal sepal 30-35 mm long including the apical point, 18-22 mm wide when flattened, laterally inflated near the base then gradually tapered, ending in an acute point 2-4 mm long, translucent with prominent green longitudinal veins and finer transverse and reticulate veins. Lateral sepals deflexed, 23-28 mm long; conjoined part 8-10 mm long, 3-4 mm wide, central pad raised and shallowly mounded, dark green, more or less papillate, margins green, infolded; free points closely parallel to slightly divergent, 15-18 mm long, thickish, linear, tapered near the apex, green, distal margins infolded, apex subobtusely. Petals 20-27 mm long, base straight, narrowed and curved in the proximal third; basal part 8-10 mm long, 2.5-3 mm wide, dark green with translucent interveinal areas; basal flange small; distal part 12-17 mm long, filiform. Labellum porrect, 15-20 mm long, straight at the base then remaining straight or shallowly curved and projecting forwards through the basal frontal opening. Labellum hinge c. 2 mm long, white. Labellum lamina greenish brown to yellowish; basal beak ovate-elliptic, c. 4 mm long, c. 2.5 mm across; lamina linear-filiform 8-11 mm long, c. 1 mm wide; apical knob ovate to quadrangular, c. 2.5 mm long, 2 mm wide, dark reddish brown, the lamina extending as a short claw-like projection. Labellum hairs of three types; white hairs on basal beak c. 1 mm long; fine yellow hairs restricted to the proximal part of the lamina, held more or less erect to spreading in two rows on the dorsal side of the lamina, c. 2 mm long; coarse straw-coloured hairs numerous, crowded over most of the lamina (18-25 pairs, 3-5 mm long) arising from the labellum margins and projecting

forwards in several directions. Column 17-20 mm long, nearly straight at the base then erect or slightly forward-leaning, light green and white, broadest just near the base of the column wings. Column wings projected forwards, 5-7 mm long, 4-4.5 mm wide, shark fin-shaped, translucent white; basal lobe downcurved, c. 3 mm long, 1.3 mm wide, obtuse, inner margins incurved, adorned with short, white, tangled cilia; mid-section c. 4 mm long, translucent green; apical lobe narrowly linear, 4-5 mm long, irregular. Anther c. 3 mm long, with a short peaked rostrum. Pollinia oblong-clavate, c. 3 mm long, yellow, mealy. Stigma central, elliptical, 8-10 mm long, 3 mm wide, raised. Capsule not seen. **Fig. 5.**



Plumatichilos stramineus
 Southeast Tas
 (Peter Fehre)

Distribution and ecology: Tasmania where widely scattered on the east coast, mainly growing in lowland coastal and near-coastal areas; also Flinders Island. It grows among shrubs, tussocks and sedges in heathland, heathy scrub, heathy forest and under tea-trees (*Leptospermum* spp.) in freely draining sands and clay loam.

Recognition: Characterised by thick fleshy leaves, thick sturdy scape and relatively large dark green fleshy flowers.

Similar species: This species is usually passed off as *P. plumosus* because of general floral similarities but both taxa are morphologically distinct and geographically isolated. By comparison with *P. stramineus*, *P. plumosus* has thinner-textured leaves, thinner scape and smaller flowers (35-45 mm long in *P. plumosus* cf. 40-50 mm long in *P. stramineus*), shorter lateral sepals (22-25 mm long cf. 23-28 mm long in *P. stramineus*) and shorter labellum (14-17 mm long cf. 15-20 mm long in *P. stramineus*). *Plumatichilos extensus* can be immediately distinguished by its much thinner, narrower flowers that appear as if they have been stretched out and *P. unicornis* has even larger flowers with a much longer thinner point on the dorsal sepal which often points upwards like a horn.

Etymology: The Latin *stramineus*, straw coloured, straw-yellow, in reference to the pale yellow to straw-coloured labellum hairs of this species.

Other specimens: Tasmania: Pottery Rd, Lenah Valley, 4 Nov. 1973, *M.Allan* (HO); Lindisfarne, Oct. 1922, *Atkinson* (QVM); Friendly Beaches, 5 Oct. 1984, *M.Cameron* (QVM); Road to Fortescue Bay, 5 Nov. 1984, *M.Cameron* (QVM); Esk Hghy. c. 5 km E of Conara, 14 Nov. 1986, *J.Campbell* (QVM); Greens Beach Road, 6 Nov. 1990, *J.Campbell* (CANB); Sherwood Block, 26 Oct. 1992, *J.Campbell* (CANB); Epping Forest, on Barton Rd, 6 Nov. 1987, *J.Campbell* (QVM); Blackmans Bay, 22 Nov. 1970, *W.H.Curtis* (HO); Eaglehawk Neck, 19 Oct. 1933, *Miss Fletcher* (CANB); Coles Bay Reserve, 12 Nov. 1990, *D.L.Jones* (CANB); Pottery Rd, Lenah Valley, 15 Nov. 1990, *P.Palmer* (CANB); Epping Forest, 20 Oct. 1986, *H.Ronken* (CANB); Somerset Reserve, 24 Oct. 1993, *P.Tonnelli* (CANB); Burwood Drive, Blackmans Bay, 21 Nov. 1992, *J.E.Wapstra* (ORG 1396) (CANB); *ibid*, 24 Oct. 1993, *J.E.Wapstra* (CANB); Coles Bay, 27 Oct. 1992, *R.Williamson* (CANB).

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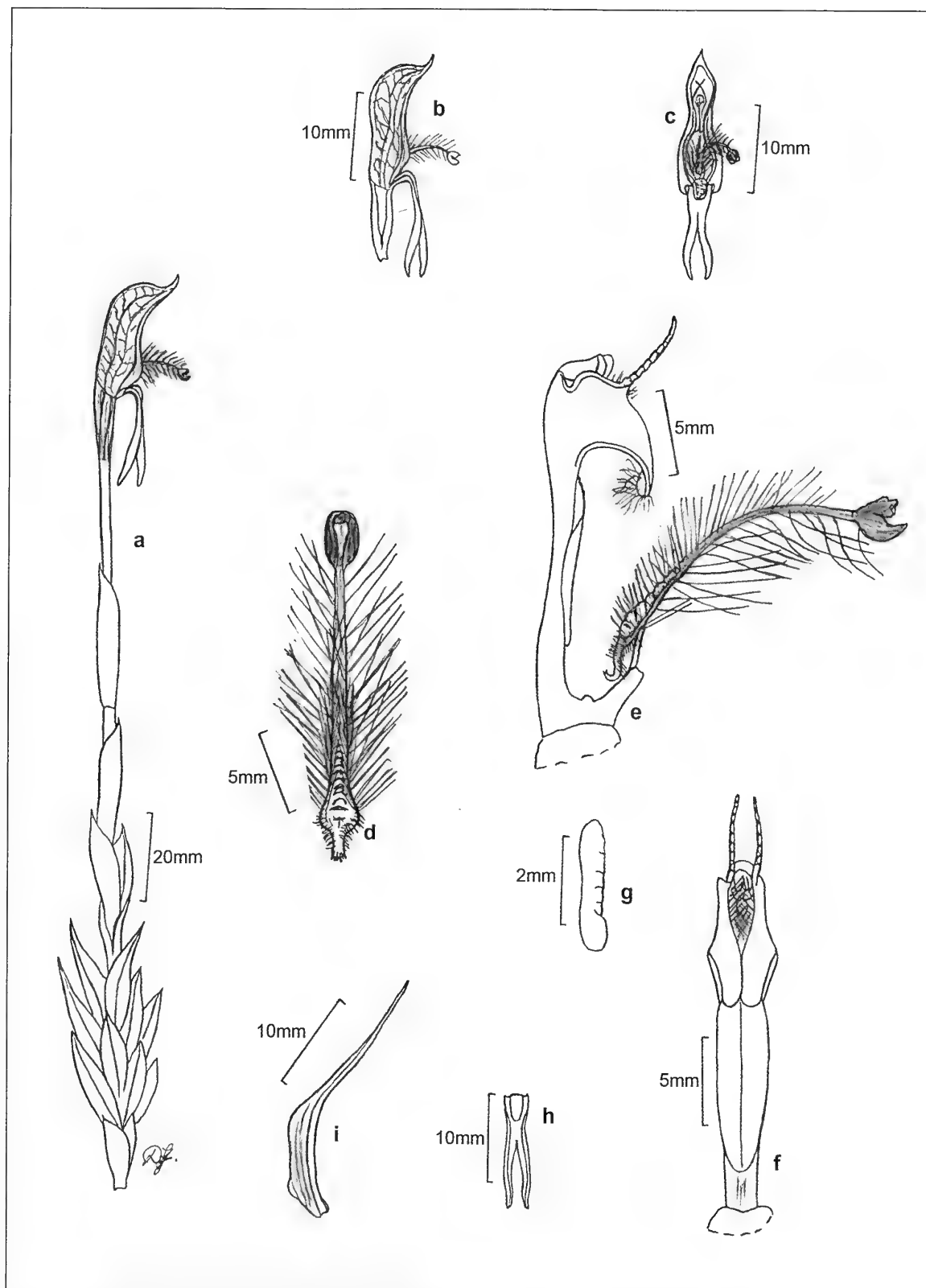
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***Plumatictilos stramineus*, Epping Forest, Tas, H.Ronken. (Fig. 5.)**

a. flowering plant; b. flower from side; c. flower from front; d. labellum from above; e. column and labellum from side; f. column from front; g. pollinium; h. synsepalum; i. petal.

Drawing: 20-10-1986, © David L. Jones.

6. *Plumatichilos unicornis* D.L.Jones, sp. nov.

With affinity to *Plumatichilos plumosus* (Cady) Szlachetko but differing by its longer flowers (55-60 mm long cf. 35-45 mm long in *P. plumosus*) with a much longer attenuate tip on the dorsal sepal, the galea tapered to a narrow suberect to erect apex ending in a thin tapered horn-like point (plump flowers in *P. plumosus* with the galea apex curved forwards nearly at right angles, the apex ending in a short thick point), longer labellum (18-25 mm cf. 14-17 mm long in *P. plumosus*) with more numerous hairs and a smaller apical knob which is usually green.

Type: Victoria. Forest Road, Anglesea, 20 Sep. 2004, E. Foster (ORG 4518) (holo CANB 652853).

Illustration: Page 178, Jeanes & Backhouse (2006), as *Pterostylis* sp. aff. *plumosa* 3, Large Bearded Greenhood.

Description: Sterile rosette with 6-12 leaves, spreading; petiole absent or indistinct, 0-2 mm long; lamina elliptical, 10-20 mm long, 3-6 mm wide, green, sometimes with paler interveinal areas at the base, margins entire, apex acute to acuminate. Fertile plants 20-35 cm tall. Cauline leaves 12-20, obliquely erect to erect, sessile, loosely crowded in an extended rosette; upper leaves bract-like, closely appressed to the stem; lamina narrowly elliptical to elliptical, 12-35 mm long, 5-10 mm wide, dark green, sometimes with some translucent interveinal areas; leaf base stem-clasping; margins entire; apex acute to acuminate. Scape smooth. Ovary 7-10 mm long, green, smooth, asymmetric. Flower solitary, leaning forwards, 55-60 mm long, 8-10 mm across, translucent green with darker green veins, shiny; petals and sepaline pad dark green. Galea widest at the base when viewed from the front and narrowed upwards, constricted just above the middle; from the side nearly straight or with a shallow concavity, curved shallowly forwards in distal third, ending in a prominent curved apical point. Dorsal sepal 35-40 mm long including the apical point, 18-22 mm wide when flattened, laterally inflated near the base then gradually tapered, ending in an acute point 5-8 mm long, translucent with prominent darker green longitudinal veins and finer transverse and reticulate veins. Lateral sepals deflexed, 27-32 mm long; conjoined part 9-12 mm long, 3-4 mm wide, central pad raised and shallowly mounded, dark green, more or less papillate, margins green, infolded; free points parallel to divergent, 18-23 mm long, thickish, linear, tapered near the apex, green, distal margins infolded, apex subobtuse. Petals 27-32 mm long, base straight, narrowed and curved in the proximal third; basal part 8-10 mm long, 2.5-3 mm wide, dark green with translucent interveinal areas; basal flange small; distal part 17-24 mm long, filiform. Labellum porrect, 18-25 mm long, straight at the base then remaining straight or shallowly curved and projecting forwards through the basal frontal opening. Labellum hinge c. 2.5 mm long, white. Labellum lamina yellowish; basal beak ovate-elliptic, c. 4 mm long, c. 2 mm across, surface transversely rugose; lamina linear-filiform 12-19 mm long, c. 0.3 mm wide; apical knob quadrangular, c. 2 mm long, 1.5 mm wide, green to greenish brown, the lamina extending as a short dorsal hook. Labellum hairs of three types; white hairs on basal beak c. 1.3 mm long; fine yellow hairs restricted to the proximal part of the lamina, held more or less erect to spreading in two rows on the dorsal side of the lamina, c. 2 mm long; coarse pale yellow hairs numerous, crowded over most of the lamina (20-26 pairs, 4-5 mm long) arising from the labellum margins and projecting forwards in several directions. Column 17-20 mm long, nearly straight at the base then erect or slightly leaning forwards, light green and white, broadest just near the base of the column wings. Column wings projected forwards, 5-7 mm long, 3 mm wide, shark fin-shaped, translucent white; basal lobe downcurved, c. 3 mm long, 1 mm wide, obtuse, inner margins incurved, adorned with short, white, tangled cilia; mid-section c. 3.5 mm long, translucent green; apical lobe narrowly linear, 4-5 mm long, smooth or irregular. Anther c. 3 mm long, with a short peaked rostrum. Pollinia oblong-clavate, c. 3.5 mm long, yellow, mealy. Stigma central, elliptical to scutiform, 8-10 mm long, 4 mm wide, raised. Capsule not seen. **Fig. 6.**

Distribution and ecology: South-western Victoria more or less between Anglesea and Apollo Bay but possibly extending further west. Grows in heath and heathy forest in freely draining sand and loam. Flowers mainly September and October, to November in the Otway Ranges.

Recognition: Characterised by its long narrow bright green flowers which taper to a narrow suberect to erect apex that ends in a thin tapered horn-like point. It also has long labellum with numerous long yellow hairs and a relatively small apical knob which is usually green.

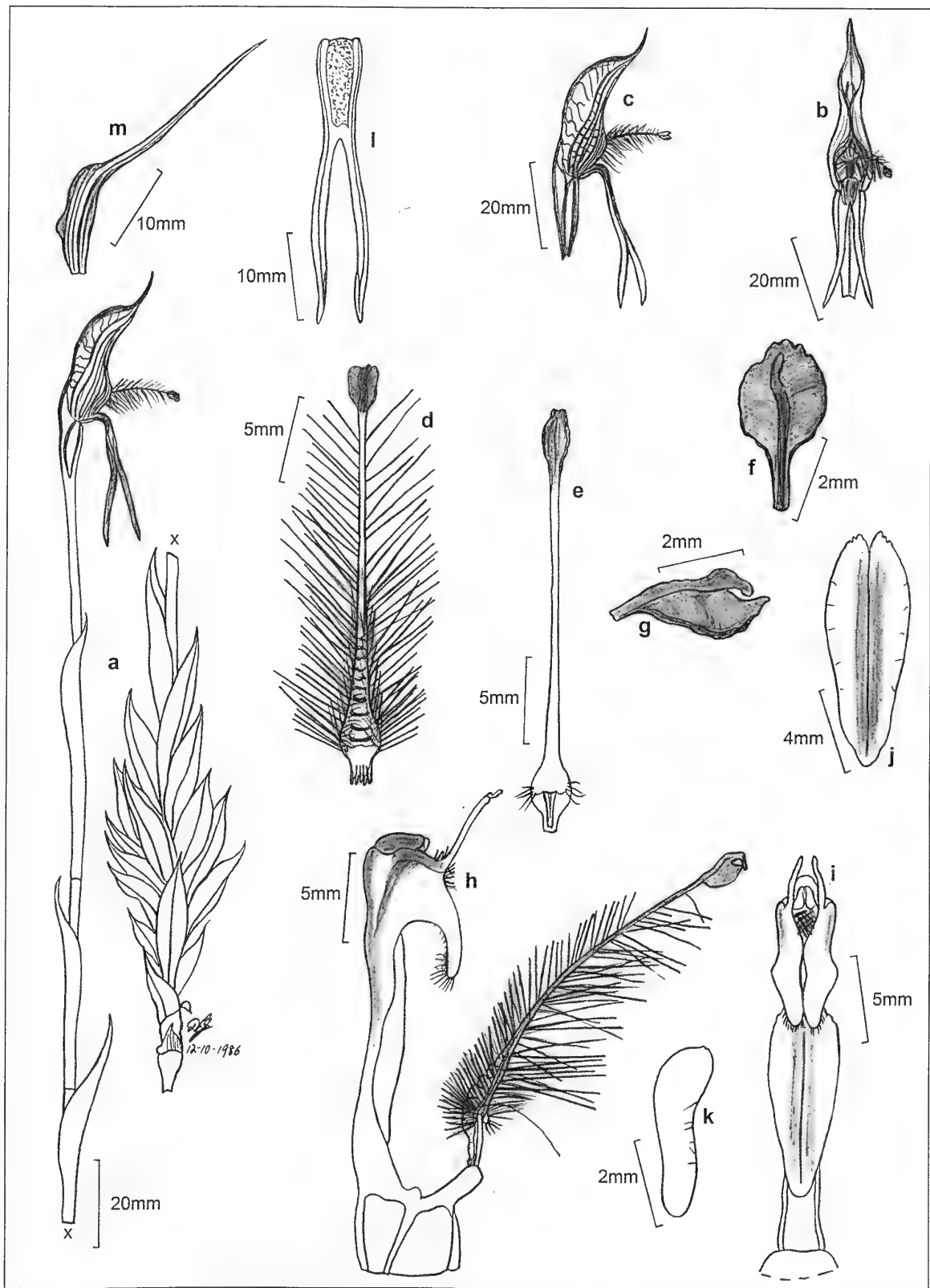
Similar species: This species has been confused with *P. plumosus* which has plumper flowers that narrow only slightly towards the apex and with the galea apex curved sharply forwards nearly at right angles and ending in a short thick point.

Notes: This species may extend into SA but I have not seen any matching specimens. Bates (2008-2018) erroneously equates this species with *P. extensus* and complicates the issue by using overlapping common names. *Plumatichilos unicornis* is readily distinguished from *P. extensus* by its larger flowers with a very bulbous base, a long point on the dorsal sepal and a relatively small apical knob on the labellum. The apical knob on the labellum is commonly green, occasionally brown.

Etymology: The Latin *uni*, one, and *cornis*, horn (in composition), in reference to the long filiform point on the dorsal sepal which often points upwards like a horn.

Other specimens: Victoria: Gellibrand River, 24 Oct. 1986, P. Barnett (CANB); Carlisle River, 26 Nov. 1991, P. Barnett (DLJ 8579) (CANB); Harvey Road, Anglesea, 20 Sep. 2004, E. Foster (ORG 4519) (CANB 652854); Anglesea, 7 Oct. 1967, D. Jones (CBG 8103426); *ibid*, Sep. 1980, P. Phillips SH1128 (CBG 8008479); *ibid*, 21 Sep. 1984, H. Richards (Nursery 1708) (CBG 8411700); *ibid*, 12 Oct. 1986, H. Richards 162 (CANB).





***Plumatictilos unicornis*, Anglesea, Vic, D.L.Jones. (Fig. 6.)**

a. flowering plant; b. flower from front; c. flower from side; d. labellum; e. labellum lamina, hairs removed; f. apical knob from above; g. apical knob from side; h. column and labellum from side; i. column from front; j. stigma; k. pollinium; l. synsepalum; m. petal.

Drawing: 12-10-1986, © David L. Jones.

New Zealand species

The smallest flowered species of *Plumatichilos*, *P. tasmanicus* (D.L.Jones) Szlachetko, which is widespread in south-eastern Australia, also occurs in New Zealand. In New Zealand it is found on the northern part of the South Island and adjacent areas around Wellington on the south of the North Island, with a disjunct northerly population around Auckland on the North Island (Johns & Molloy 1983 – as *Pterostylis plumosa*, St George *et al.* 1996 – as *Pterostylis tasmanica*). A second species discovered during routine examination of herbarium specimens at AK is here described as new.

7. *Plumatichilos singularis* D.L.Jones & Molloy, *sp. nov.*
With affinity to *Plumatichilos tasmanicus* (D.L.Jones) Szlachetko but differing by its larger flowers (c. 40 mm long cf. 18–25 mm long in *P. tasmanicus*), longer acuminate point on the dorsal sepal (3 mm long cf. 0.5–1.5 mm in *P. tasmanicus*), longer lateral sepals (c. 25 mm long cf. 20 mm long in *P. plumosus*) that are strongly deflexed and a longer labellum (c. 18 mm long cf. 10–15 mm long in *P. tasmanicus*), with relatively short sparse hairs and a large apical knob.

Type: New Zealand. North Island, Waitemata County, Albany, Lonely Track, 13 Sept. 1958, *E.D.Hatch* (holo AK 169150).

Description: Solitary, terrestrial, tuberous herb. Fertile plants c. 10 cm tall. Leaves suberect, 6–10; lower leaves forming a loose spiral rosette, shortly petiolate or sessile; upper leaves bract-like, scattered, appressed; lamina oblong-elliptical to obovate-elliptical, 10–20 mm long, 4–6 mm wide, dark green; base stem-clasping; apex acuminate. Ovary c. 6 mm long, green, smooth. Flower solitary, leaning forward, c. 40 mm long, transparent to translucent green with darker green veins. Galea c. 28 mm long, from the front inflated at the base, tapered upwards, from the side curved forwards in the distal third, the apex almost as broad as the base. Dorsal sepal c. 28 mm long, laterally inflated at the base then gradually tapered, ending in an acuminate point c. 3 mm long, translucent with prominent longitudinal green veins and finer transverse and reticulate veins. Lateral sepals deflexed; conjoined part c. 9 mm long, c. 2 mm wide, central part raised, dark green; free points more or less parallel, c. 16 mm long, linear; basal margins infolded; apex subacute to obtuse. Petals c. 22 mm long; basal part narrowly oblong, c. 8 mm long; basal flange obscure; distal part flagelliform. Labellum porrect, straight or curved, c. 18 mm long; basal beak narrowly ovate, short; lamina linear-filiform, c. 16 mm long, greenish; apical knob c. 2.5 mm long, c. 1.5 mm deep, dark reddish brown. Labellum hairs a mix of fine yellow hairs mainly erect in 2 rows on the dorsal side of the lamina, c. 1 mm long; coarse yellow hairs mainly projected forwards and downwards, 1–3 mm long, c. 10 pairs from labellum margins. Column c. 14 mm long; further details lacking. Capsule not seen.

Distribution and ecology: Apparently endemic in New Zealand. Known with certainty only from the type collection but probably more widespread than this. The habitat is not recorded with the specimen but Hatch (1949) records that species of *Plumatichilos* (erroneously as *Pterostylis barbata*) occur in New Zealand as “solitary or in small groups in scrub or along forest margins”. Flowering: September (probably also October).

Recognition: Characterised by moderately large flowers, moderately long tip on the dorsal sepal, strongly deflexed lateral sepals, moderately long labellum with relatively short sparse hairs and a large apical knob.

Similar species: This new species has affinities with *P. tasmanicus* but that species has smaller flowers that are self-pollinating and with a very short point on the dorsal sepal and densely crowded labellum hairs. The new species is much less robust than other Australian species in the *P. plumosus* complex, with smaller leaves, smaller flowers and a shorter labellum with fewer and shorter labellum hairs.

Notes: This is the second species of *Plumatichilos* recorded from New Zealand. It appears to be quite rare, certainly it is less common than *P. tasmanicus*. The description provided above lacks some details of the column structures.

Etymology: The Latin *singularis*, unique, singular, different, in reference to its distinctive morphology when compared with both *P. tasmanicus* and *P. plumosus*.

Acknowledgements

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Bearded Orchids of Kangaroo Island, South Australia

by Robert J. Bates

Kangaroo Island was officially discovered by English and French explorers in 1803. They found it to be uninhabited by humans, but home to a species of dwarf emu and great mobs of kangaroos; hence the name Kangaroo Island. At 150km long and almost 100km wide, it is South Australia's largest island.

The author first visited the Island about 80km south of Adelaide while a university student in 1964 and was amazed at the diversity of orchids, particularly bearded orchids, belonging to the genus *Calochilus*.

I was excited to discover also, that a distant relative George 'Fireball' Bates who jumped ship and was the Island's first permanent settler. He was one of many sailors on the international whaling and sealing vessels from about 1800 to 1850 who jumped ship. These were mostly rascally characters who introduced pigs, goats and other exotics which rapidly destroyed native plants and also caused extinctions of local animals such as the dwarf Kangaroo Island emu. They indulged in the politically incorrect practice of kidnapping native girls from the mainland as wives!

It is estimated that at the time of settlement there were almost a hundred different native plant species which grew only on Kangaroo Island; about 60 local endemics are still present including a few orchids.

I did a beard orchid survey in the 1980s and there were still three species left, but the remainder may have been destroyed by rooting pigs, clearance of half the native bush and by the rapidly increasing salinity which resulted in extinction of whole ecosystems, mostly wetlands and of the whole Cygnet River system. At present about half the orchid species recorded from Kangaroo Island are regarded as threatened. Well above the state average. A sad story and a continuing one as a new golf course has been proposed in 2018 which will result in more destruction of beard orchid habitat, and environmentalists promise to stand in front of the bulldozers if it goes ahead. So much cleared land on Kangaroo Island why put golf links in bushland.

About the Kangaroo Island *Calochilus* species:

1: The most common beardie on the Island, at present treated as a form of *Calochilus robertsonii*, does not match the type form of that taxon from Southwestern Victoria, nor does the substrate of leaf litter over lateritic rubble where it occurs on Kangaroo Island. In this and in general appearance the Kangaroo Island populations resemble *Calochilus stramenicola* from Western Australia which long ago was linked to the Island.

Calochilus robertsonii
from Kangaroo Island
(photo: R.J. Bates)



2: *Calochilus paludosus* the swamp beard orchid must once have been common in the many 'once upon a time' swamps of Kangaroo Island. I last saw it there in the 1980s at a site now covered by cattle. There was also a rare "albino" form with green and white blooms that lacked anthocyanin.



Calochilus paludosus
(rare "albino"
anthocyanin-free form)
(photo: R.J. Bates)



Calochilus paludosus
(photo: June Niejalke)

3: *Calochilus pruinosus* features in a recent book on orchids of Kangaroo Island. It grows on limestone in mallee but doesn't appear to have been seen there for many years.



Calochilus pruinosus
(photo: June Niejalke)



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4: *Calochilus saprophyticus* I found near Southwest River and photographed in the 1980s growing with *Calochilus paludosus*. My image of it appeared on the cover of a South Australian Naturalist journal soon after (as *Calochilus campestris*) but to my disgust it was featured upside down!

5: *Calochilus* sp. An undescribed beard orchid (confused with *C. herbaceus*) photographed by June Niejalke near Fairview Conservation Park, S.A. grew on Kangaroo Island around shallow depressions which held freshwater in the 1970s but are now salt pans, very noticeable in cleared paddocks to those who fly to Kangaroo Island as they land at Kingscote airport. Similar shallow lakes once occurred right across the mid-Southeast of South Australia but most there are now salty too. One of these 'lakes' on Kangaroo Island known as Larrikin Lagoon was still fresh until recently and may still have beard orchids around it.



Calochilus saprophyticus
from Kangaroo Island
(photo: R.J. Bates)



Calochilus sp.
(previously confused
with *C. herbaceus*) from
Fairview Conservation Park,
South Australia
(photo: June Niejalke)

So much for those signs welcoming visitors to Kangaroo Island with *Welcome to pristine Kangaroo Island*. Conservation is not the forte there. The Island as a whole has never had a complete orchid survey perhaps now is the time before it is too late.

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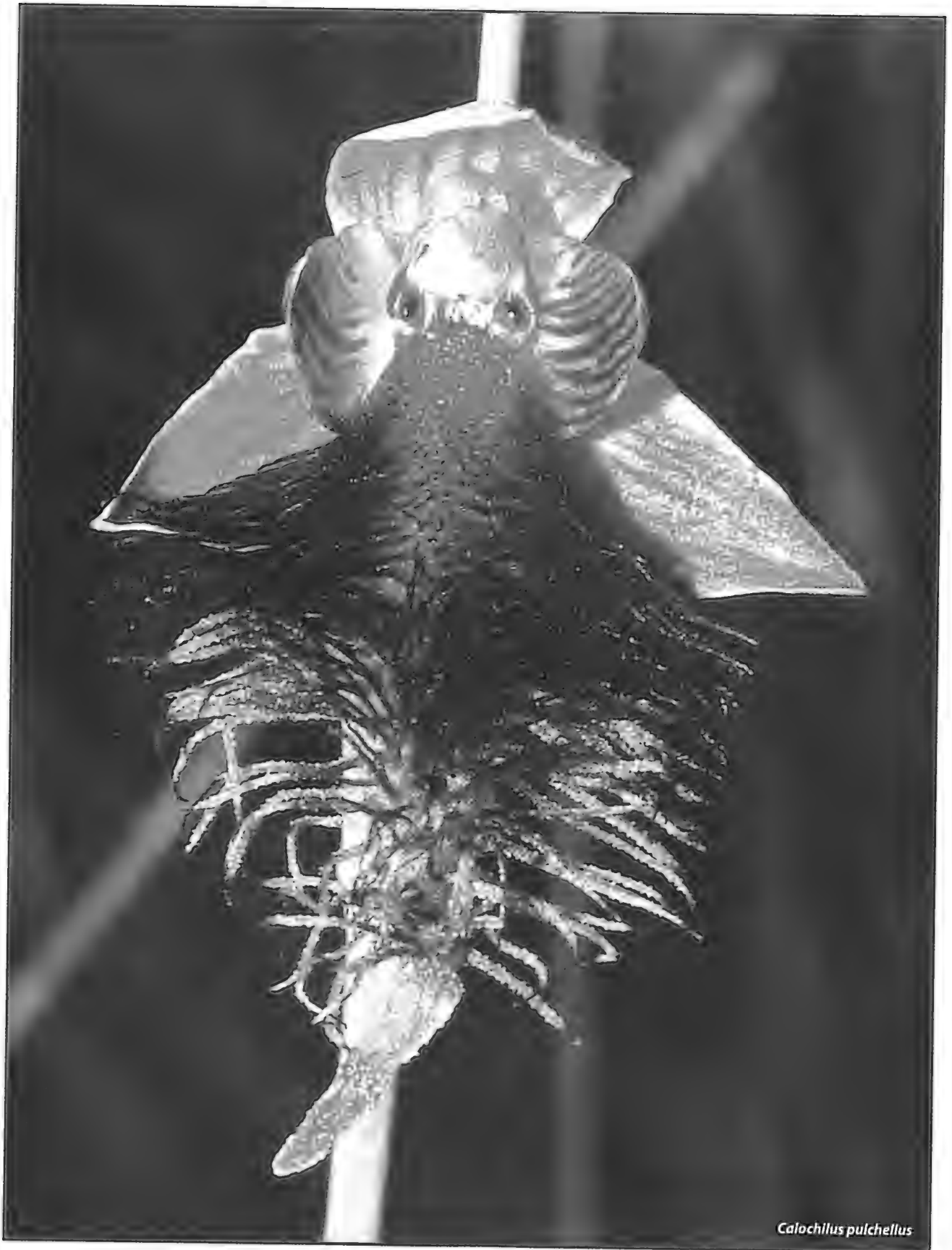
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Calochilus pulchellus

Is It Just Certain Areas?

Text and images by Alan W. Stephenson

Since I became environmentally involved as far as orchids and their habitat are concerned, I have read numerous environmental assessments (EA) produced by various individuals and companies. Without exception, this academically unqualified orchid person has been able to find fault with all of them, mainly due to the obvious lack of orchid knowledge or awareness of those responsible for the assessments and reports.

Many of those who undertake this work have a tertiary degree of some type. Some have a degree in environmental science, a Master's Degree in science (MSc) or a PhD. Again, most of these have knowledge of trees, general native vegetation, birds, reptiles and weeds and without fail all are capable of writing a very good report, which is something with which I often struggle.

My introduction to this side of the orchid world came in 1995 when a proposal to construct a 1000ha waste facility was undertaken, initially with desktop surveys using topographical maps to find a suitable location. The very long list of 42 sites was eventually reduced to five and an EA was conducted over these sites with a final selection confirmed. The area selected featured a steep forested gully with several small creeks either in the gully or adjacent and all of these creeks flowed either into a lake or the Pacific Ocean. The area was mainly NSW State Forest and logging was intensified to destroy the area as with an upcoming state election the leader of the opposition promised to declare the area as National Park if he was elected and the idea of course was to destroy the area to make it unworthy of National Park status.

At this time, many locals who did not want the area destroyed formed a group opposed to the waste facility for many reasons, including loss of habitat and also the probability of Aboriginal sites being destroyed. Also at the time my daughter was attending high school with the daughter of a lady married to an indigenous man and the wife became involved with the local opposition group to identify and protect certain sites. During one of her visits to the area she took a very average photo of a plant she was unable to identify which I easily identified as *Calanthe australasica*, a very large evergreen terrestrial orchid but at this time not in flower. My interest was heightened and a few days later we visited the area and within 2 hours I had managed to locate and identify 19 orchid species. Some were terrestrial but epiphytes and lithophytes were also observed. None of the species were endangered but my main point of annoyance was that none of the species were recorded or included on the species list of the EA.

I then wrote my first ever environmental report for the group opposed to the facility and I was later informed that basic report was widely distributed among the environmental legal fraternity. To date 23 years later no waste facility has been constructed and the politician (then NSW Premier Bob Carr) kept to his promise with the area now being The Greater Conjola National Park.

A couple of years following that episode another situation came to light via the work of the same person. This involved an endangered species, *Prasophyllum affine* and as another endangered species had been discovered nearby many years ago it was also a requirement for survey. This species was *Arachnorchis tessellata* (*Caladenia tessellata*) and a few things went wrong with this survey. It was a requirement of the Director General of National Parks that any plant unidentified during the survey should be identified via a Botanical institution but his message failed to resonate. Firstly, the survey for *Arachnorchis tessellata* was conducted shortly following a fire, and several months before leaves were due to appear. A survey later in the year noted many orchids including *Prasophyllum brevilabre*, *Prasophyllum elatum* and a further *Prasophyllum* sp., which was not identified until a few years later and not by those involved in the proposed development.

The *Prasophyllum* sp. was seen and photographed by myself, an Austrian orchid man, his daughter and their Australian hostess, during an outing in 1997. I had not seen this species before so my slides were identified at the earliest opportunity in Wollongong by two very surprised orchid people.

In due course after the establishment of a Recovery Team and the withdrawal of the company which originally had the



Calochilus platycheilus

rights to construct a large Regional Shopping Centre and residential estate, another large developer took over and appointed another EA company. The new company began surveys and at the same time I was involved in another EA at a site 500 metres distant across the other side of an intersection. While working one morning I received a phone call from the head of the EA Company, who asked me a question about *Cryptostylis hunteriana* for which both of us were surveying at different sites. I was asked, "Alan, this orchid we are looking for, can you tell me what it looks like?" I was more than surprised but said to get to my site as I had several plants in front of me. When these were witnessed by this person all was okay but again the impression was that a tertiary degree is no guarantee of orchid knowledge. This person was then familiar with *Prasophyllum affine* and *Cryptostylis hunteriana* but at the same time managed to overlook *Calochilus pulchellus*, one plant of which was growing in a stump with flowers at eye level. The site I was assessing contains many plants of *Cryptostylis hunteriana* and a handful of *Prasophyllum affine*, but the person who conducted the fauna assessment failed to notice the endangered Ground Parrot but as luck would have it one rose from the grass when I was in consultation on-site with the landowners and they were horrified.

One local development company is well known for its choice of an EA surveyor and the EA reports are interesting reading. In one section where orchid species are listed, *Cryptostylis* species are listed as *Cryptostylis subulata* and *Cryptostylis* sp. As three of the four species in this genus are evergreen with a leaf available all year around, there is no

excuse for failing to identify one of the species but for this firm it is a regular habit. Furthermore, the same person stated in a report for the leafless species in the genus "we have conducted walked and driven transects". Many orchids can be seen from a vehicle but I found this to be lazy, incompetent or immoral.

Almost as bad was a survey of 31 hectares of land stated as being conducted in "three person hours". This survey preceded the proposed establishment of yet another very large waste facility. This facility would source its waste from as far away as Bega, 260km further south. The waste to be transported on countless "B Double" trucks would not be sorted and could contain chemical waste, Asbestos or a range of other hazardous substances. To reduce noise to two residents a four metre high brick wall would be constructed on the boundaries of their rural lots. There were five endangered species within the specified radius but at the time of the survey not one would have been above ground and visible, let alone be in flower so as they be recognised. The facility was refused following several hearings by the Southern Joint Regional Planning Panel (JRPP) but orchids were but a minor part as all creeks in the area ran into the Jervis Bay Marine Park or a water body known as St. Georges Basin. In addition to this the so-called sedimentation ponds were poorly designed and constructed without permission.



Cryptostylis erecta



Cryptostylis hunteriana

The second and final sitting of the JRPP made the decision less than five minutes after final submissions were presented.

For a recent development, yet to be determined, surveys were undertaken by several persons looking for *Cryptostylis hunteriana* but the transects used were as far apart as 50 metres. I feel my orchid eyes are fairly good but could never claim to see a plant of *Cryptostylis hunteriana* either in bud or flower from that distance. The same people also missed listing *Cymbidium suave*, *Orthoceras strictum*, *Dipodium variegatum* and *Prasophyllum flavum*, all of which were in flower at the time of the *Cryptostylis hunteriana* survey. I know they were as I and a group of non-orchid locals found these and a further 19 plants of *Cryptostylis hunteriana*, unseen and unlisted by the so-called professionals. To add insult to injury we listed all of these orchids in separate submissions and the so-called professionals added them to their list as their own discoveries. It appears morality and ethics are unknown qualities as far as some are concerned.

The most recent situation is currently under consideration and has attracted the NSW Land and Environment Court and concerns the lack of a survey for *Speculanthia ventricosa*, a critically endangered terrestrial closely related to *Pterostylis*. The land for 58 units has been cleared but this is only part of the problem. There are several other endangered species within six kilometres of the site and none have been subject to a survey. These are *Cryptostylis hunteriana*, *Prasophyllum affine*, *Calochilus pulchellus*, *Genoplesium baueri* and *Rhizanthella slateri*. I am hopeful of being one of six people permitted to speak to the Court at an on-site meeting but as I write this is yet to be determined.

Am I wrong in thinking my local government area is alone with being continually subjected to a very poor standard of environmental survey, or is this affliction spread across New South Wales and other states? I can only hope this is not the case, as if it is, our orchids and their habitats are destined for extinction. I am aware some developers use certain people so as to assure them of a pre-determined result and this has been obvious to me for many years.

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Dipodium variegatum



Rhizanthella slateri



Genoplesium baueri



Prasophyllum flavum



Prasophyllum affine
(photo: D.P. Banks)

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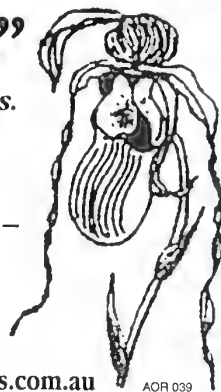
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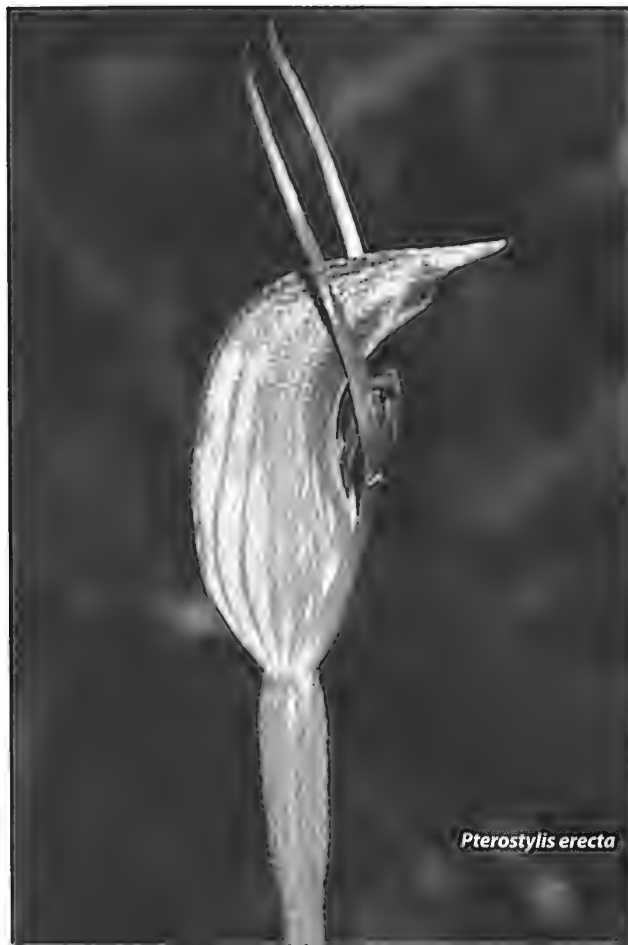
Orthoceras strictum



Diuris sulphurea



Pterostylis nutans



Pterostylis erecta



Calanthe australasica



Dendrobium speciosum
(*Thelychiton speciosus*)



Cymbidium suave

New Combinations in the Pterostylidinae

by David L. Jones and Christopher J. French

Section 41.5 of the **International Code of Nomenclature for Algae, Fungi, and Plants (Shenzhen Code)** (Turland *et al.* 2018), states that “a new combination, name at new rank, or replacement name is not validly published unless its basionym or replaced synonym is clearly indicated and a full and direct reference given to its author and place of valid publication, with page or plate reference and date”.

Furthermore, “For the purpose of Art. 41.5, a page reference (for publications with a consecutive pagination) is a reference to the page or pages on which the basionym or replaced synonym was validly published or on which the protologue appears, but not to the pagination of the whole publication unless it is coextensive with that of the protologue.”

The authors of this paper published 13 intended new combinations in *Pterostylis* in the *Australian Orchid Review* 83(1): 63 (2018) but cited the full paginations of the publications in which the intended basionyms appeared. This failed to meet the requirement of “a full and direct reference” and the intended combinations were thus invalid. The new combinations are republished below in compliance with the Shenzhen Code.

Pterostylis atosanguinea (D.L.Jones & C.J.French) D.L.Jones & C.J.French, **comb. nov.** Basionym: *Urochilus atosanguineus* D.L.Jones & C.J.French, *Austral. Orchid Rev.* 82(3): 49–50, fig. 1 (2017)

Pterostylis orbiculata (D.L.Jones & C.J.French) D.L.Jones & C.J.French, **comb. nov.** Basionym: *Urochilus orbiculatus* D.L.Jones & C.J.French, *Austral. Orchid Rev.* 82(3): 52–53 (2017)

Pterostylis faceta (D.L.Jones, C.J.French & M.A.Clem.) D.L.Jones & C.J.French, **comb. nov.** Basionym: *Plumatichilos facetus* D.L.Jones, C.J.French & M.A.Clem., *Austral. Orchid Rev.* 82(4): 33–37, fig. 1 (2017)

Pterostylis galgula (D.L.Jones & C.J.French) D.L.Jones & C.J.French, **comb. nov.** Basionym: *Plumatichilos galgulus* D.L.Jones & C.J.French, *Austral. Orchid Rev.* 82(4): 38–41, fig. 2 (2017)

Pterostylis angulata (D.L.Jones & C.J.French) D.L.Jones & C.J.French, **comb. nov.** Basionym: *Diplodium angulatum* D.L.Jones & C.J.French, *Austral. Orchid Rev.* 82(4): 42–44, fig. 1 (2017)

Pterostylis ectypha (D.L.Jones & C.J.French) D.L.Jones & C.J.French, **comb. nov.** Basionym: *Diplodium ectyphum* D.L.Jones & C.J.French, *Austral. Orchid Rev.* 82(4): 46–48, fig. 2 (2017)

Pterostylis meridionalis (D.L.Jones & C.J.French) D.L.Jones & C.J.French, **comb. nov.** Basionym: *Diplodium meridionalis* D.L.Jones & C.J.French, *Austral. Orchid Rev.* 82(4): 50–51, fig. 3 (2017)

Pterostylis longicornis (D.L.Jones & C.J.French) D.L.Jones & C.J.French, **comb. nov.** Basionym: *Plumatichilos longicornis* D.L.Jones & C.J.French, *Austral. Orchid Rev.* 82(5): 27–29, fig. 1 (2017)

Pterostylis precatória (D.L.Jones, C.J.French & M.A.Clem.) D.L.Jones & C.J.French, **comb. nov.** Basionym: *Plumatichilos precatóris* D.L.Jones, C.J.French & M.A.Clem., *Austral. Orchid Rev.* 82(5): 31–32, fig. 2 (2017)

Pterostylis saxosa (D.L.Jones & C.J.French) D.L.Jones & C.J.French, **comb. nov.** Basionym: *Plumatichilos saxosus* D.L.Jones & C.J.French, *Austral. Orchid Rev.* 82(5): 34–35 (2017)

Pterostylis serotina (D.L.Jones, C.J.French & M.A.Clem.) D.L.Jones & C.J.French, **comb. nov.** Basionym: *Plumatichilos serotinus* D.L.Jones, C.J.French & M.A.Clem., *Austral. Orchid Rev.* 82(5): 36–38, fig. 3 (2017)

Pterostylis sigmoidea (D.L.Jones & C.J.French) D.L.Jones & C.J.French, **comb. nov.** Basionym: *Plumatichilos sigmoideus* D.L.Jones & C.J.French, *Austral. Orchid Rev.* 82(5): 38–39, fig. 4 (2017)

Pterostylis arbuscula (D.L.Jones & C.J.French) D.L.Jones & C.J.French, **comb. nov.** Basionym: *Urochilus arbusculus* D.L.Jones & C.J.French, *Austral. Orchid Rev.* 82(5): 44–46, fig. 2 (2017)

Acknowledgements

Much appreciation to Anna Monro for assistance in interpretation of the International Code of Nomenclature and review of this paper.

Literature Cited

- International Code of Nomenclature for Algae, Fungi, and Plants (Shenzhen Code) (Turland *et al.* 2018).

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Danhatchia novaehollandiae (Orchidaceae: Goodyerinae), a New Species from South-eastern Australia

by David L. Jones and M.A. Clements

Abstract

Danhatchia novaehollandiae, known from three sites in New South Wales, is described as new. The new species is compared with *Danhatchia australis* from New Zealand, the only other known species in the genus.

Key Words

Orchidaceae, Goodyerinae, *Danhatchia novaehollandiae*, *Danhatchia australis*, new species, New South Wales, Australian flora.

Introduction

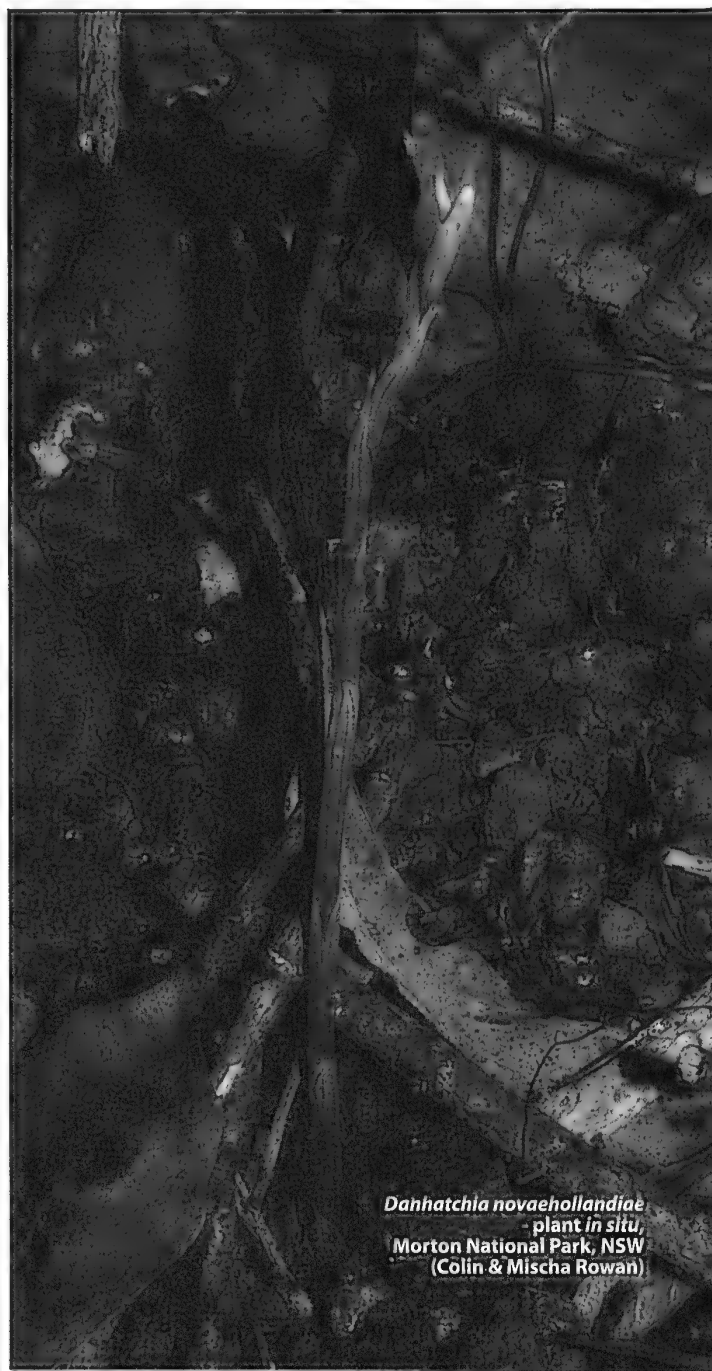
Danhatchia was erected as a new genus in 1995 to accommodate a single New Zealand orchid that was originally placed in the genus *Yoania*. After much consideration as to its generic affinities, *Yoania australis*, the orchid in question, was described in 1963 by the New Zealand botanist Edwin Daniel Hatch. Subsequent studies showed that the orchid did not sit comfortably in *Yoania* and the genus *Danhatchia* was named by the American botanists Leslie Garay and Eric Christenson to accommodate it. For the generic description and history of the orchid's misplacement in *Yoania* see Garay & Christenson (1995). Specimens of a *Danhatchia* similar to *Danhatchia australis* were discovered in New South Wales in 2010.

The discovery of *Danhatchia* in Australia raises some interesting questions of biogeography with taxonomic implications. As pointed out by David Banks (Banks 2012), the trade winds between Australia and New Zealand blow predominantly from the east and it is unlikely that *Danhatchia* reached Australia from New Zealand. A more likely scenario is that *Danhatchia* evolved in Australia and then became established in New Zealand following the path of other terrestrials such as *Pterostylis nutans*, *Chiloglottis valida* and *Cryptostylis subulata*. This proposal is supported by the results of study based on molecular phylogenetic data which concluded that the Orchidaceae appear to have originated in Australia some 112 million years ago (Givnish *et al.* 2016).

The Australian material differs morphologically from *Danhatchia australis* and is here described as new.

Taxonomy

Danhatchia novaehollandiae D.L.Jones & M.A.Clem., *sp. nov.* With affinity to *Danhatchia australis* (Hatch) Garay & Christenson but differing by its much smaller cleistogamous flowers with all the floral segments much smaller (dorsal sepal 3 x 1.3 mm *cf.* 5 x 2.5 mm in *D. australis*, lateral sepals 3.5 x 1.5 mm *cf.* 5 x 2.3 mm in *D. australis*, petals 3.5 x 0.7 mm *cf.* 4 x 1.8 mm in *D. australis*, labellum 3 x 2 mm *cf.* 4.5 x 3 mm in *D. australis*), the petals narrowly spatulate (broadly elliptic to obelliptic in *D. australis*).



Danhatchia novaehollandiae
- plant in situ,
Morton National Park, NSW
(Colin & Mischa Rowan)

Type: New South Wales. Southern Tablelands, Morton National Park, Bundanoon Creek Walking Track, 11 Dec. 2016, *Shoko Okada* (ORG 7641) (holo CANB).

Illustrations: Page 49, *Austral. Orch. Rev.* 77(1): 2012, Page 55, *Austral. Orch. Rev.* 82(1): 2017 – as *Danhatchia australis*.

Description: Leafless, terrestrial, mycoheterotrophic, rhizomatous herb. Rhizome subterranean, creeping, branching, brittle. Stems erect, 10–20 cm tall, c. 2 mm thick, often arising in clusters, pale pinkish brown, glandular hairy. Sterile bracts 4–7, closely sheathing, imbricate or separated, paler than the stem, elliptical when flattened, 12–15 mm long, c. 4 mm across, apex acuminate, three main veins prominent, accessory veins fainter. Raceme 2–5.5 cm long, 1–7-flowered. Fertile bracts closely sheathing the ovary, elliptical, 5–7 mm long, c. 3 mm wide, hyaline, three main veins prominent, accessory veins fainter, apex acuminate. Pedicels 0–1 mm long. Ovaries erect, c. 5 mm long, rapidly swelling early in anthesis. Flowers 3–3.5 mm long, cleistogamous, perianth segments remaining closed, short-lived and withering quickly, cream to pinkish suffused and striped with brown, externally glandular hairy. Dorsal sepal cuneate, c. 3 mm long, c. 1.3 mm across, cream with a brown median stripe and brown margins. Lateral sepals cuneate, c. 3.5 mm long, c. 1.5 mm across, cream with a brown base and brown median stripe. Petals narrowly spatulate, c. 3.5 mm long, c. 0.7 mm across, cream with a pale brown median band, apex subacute. Labellum sessile, ovate-oblong, c. 3 mm long, c. 2 mm wide, base saccate with a thickened median rib, cream with five brown veins, margins entire, pinched in near the middle, distal margins papillate, apex shortly apiculate. Column deteriorated. Capsules erect, broadly obovate, 8–1 mm long, 3–4 mm across, brown, ribbed, glandular hairy.

Distribution and ecology: Currently known from three sites in New South Wales, viz near Comboyne on the Mid North Coast growing in subtropical rainforest (two sites) and near Bundanoon in the Southern Highlands growing in temperate rainforest. Soils are red brown friable clay loams covered with forest litter. Alt. c. 600–660 m.

Flowering period: Late November and December.

Notes

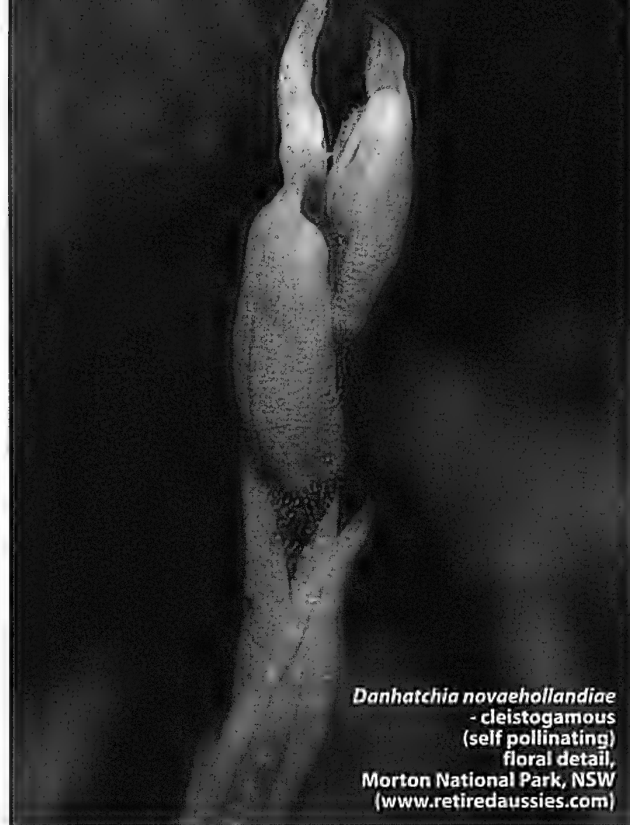
The history of the discovery of this species in Australia has been detailed by David Banks (Banks 2012). The orchid was first discovered in Australia on the Comboyne Plateau in 2010 by a keen naturalist from Wingham who sent photos for identification to Karen Wilson at the Royal Botanic Gardens, Sydney. Follow-up collections were made in 2015 by botanists from the gardens (Flora Online Website <http://plantnet.rbgsyd.nsw.gov.au>). A further small group of plants were located nearby in the same forest in 2016. Specimens from the original locality were also collected under permit by John Riley in 2017.

Danhatchia was also found near Bundanoon in the Southern Highlands by Greg Steenbeeke in January 2012 when plants in an advanced stage of capsule development and seed formation were found. A return trip in late November 2012 found plants in bud (Steenbeeke 2012). A further trip to this site by CSIRO scientists accompanied by Alan Stephenson in 2017 located plants also in an advanced stage of capsule development (Stephenson 2017).

Conservation status: Known from only three sites, all in National Parks, but this orchid is cryptic and easily overlooked; suggest 2kc by the criteria of Briggs & Leigh (1996).

Etymology: The Latin *novae-hollandiae*, strictly interpreted as New Holland but a well-known historical epithet for Australia, chosen to reflect the species origin and emphasise its distribution as distinct from *Danhatchia australis*.

Other collections: NSW. Comboyne Plateau, 22 Nov. 2017, J.Riley (CANB).



Danhatchia novaehollandiae
- cleistogamous
(self pollinating)
floral detail,
Morton National Park, NSW
(www.retiredaussies.com)

Acknowledgements

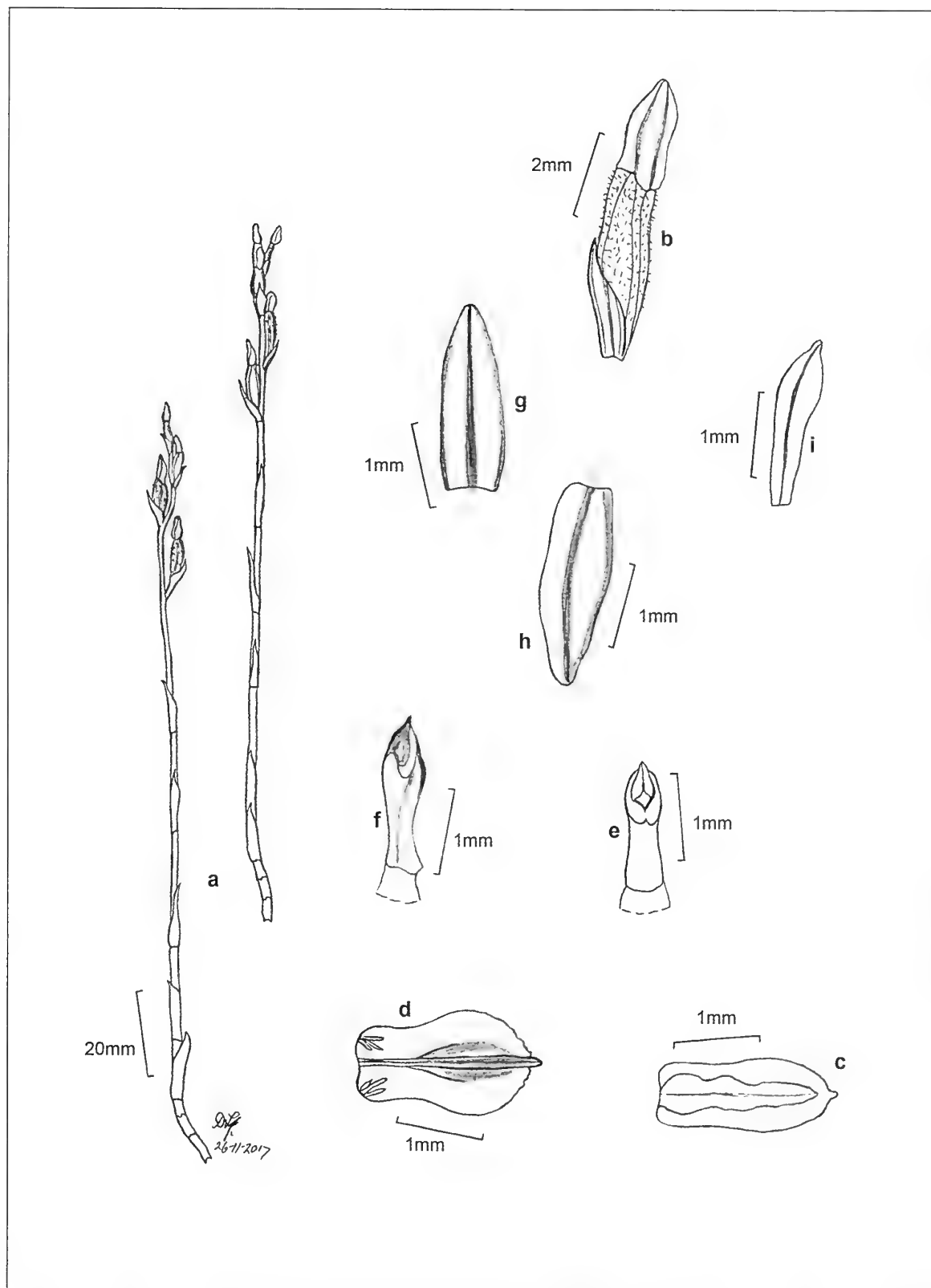
Special thanks to Jean Egan for preparing David Jones's drawing for publication, John Riley for collecting specimens on our behalf and Alan Stephenson for discussions about the species. Colin & Mischa Rowan (www.retiredaussies.com) kindly allowed the use of their images of this taxon from the Southern Highlands. Thanks also to Barbara Jones for reading the manuscript.

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***Danhatchia novaehollandiae*, Comboyne Plateau, NSW, J.Riley.**

a. flowering plants; b. flower, ovary and bract from side; c. labellum from above; d. labellum from above, flattened; e. column from front;
f. column from side; g. dorsal sepal; h. lateral sepal; i. petal.

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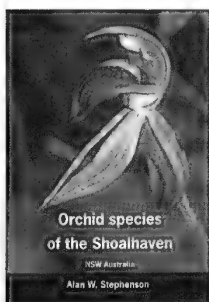
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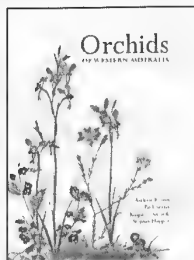
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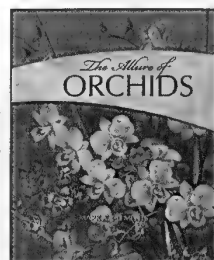
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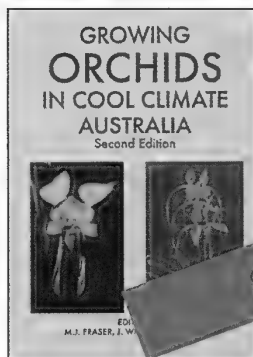
The Allure of Orchids features an essay by internationally recognised orchid expert Mark Clements, accompanied by a portfolio of illustrations, both historical and modern, of this alluring species. In it you will find works by around 25 artists, including the extraordinarily detailed lithographs of early botanical illustrator Ferdinand Bower, Ellis Rowan's beautiful paintings, the delicate watercolours of Margaret Cochrane Scott, and many more. *The Allure of Orchids* is divided into two parts; Terrestrial or ground orchids and Epiphytic or tree dwelling species. Clements says, "These illustrations can be enjoyed simply as works of art and part of our rich and colourful Australian illustrative heritage. But, significantly, they are also part of the scientific record of this country, particularly during the early exploration of the continent."

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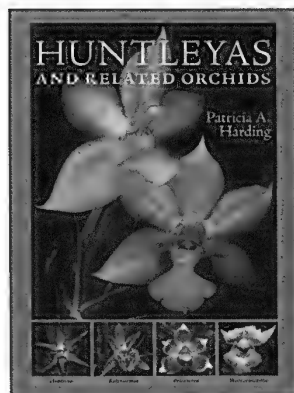
Editors: Fraser, M.J., Wright, J.,
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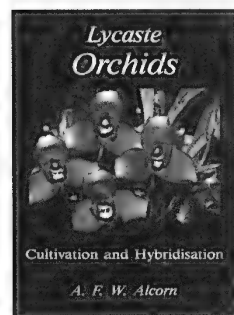
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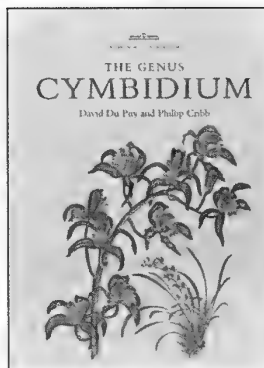
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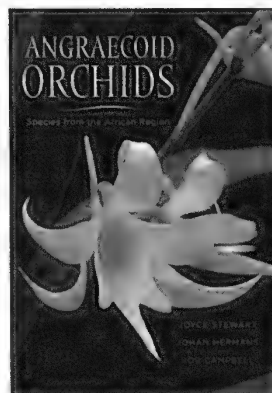
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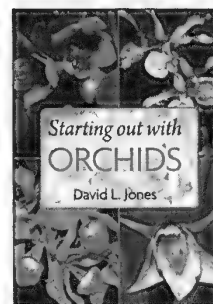
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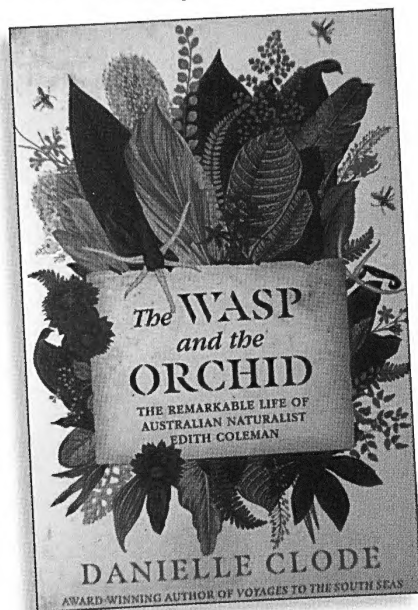
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– Book review by Helene Wild



The Wasp and the Orchid

– the remarkable life of Australian naturalist Edith Coleman

by Danielle Clode

Published in Picador by Pan Macmillan Australia Pty Ltd 2018
420 pages, Hardback, black & white and colour photographs
Price: \$39.99 plus postage

There had been much excited talk about *The Wasp and the Orchid* so, by the time I held a copy in my own hands, I was expecting something exceptional. I wasn't disappointed, for Danielle Clode's research had obviously been extensive and her writing is expressive.

The author briefly covers the life of Edith Coleman (1874 – 1951), from her origins in Surrey, England, to the time when, aged 48 and a wife, mother of two daughters and an ex school teacher living in Blackburn on Melbourne's outer eastern fringes, she joined the Field Naturalists Club of Victoria and delivered her first paper on winter flowering orchids. From that point the book covers the many achievements of this remarkable "housewife" - a self-created naturalist, an authority on our Australian native orchids, and a woman who also studied echidnas, mistletoe, stick insects, spiders and birds. Edith Coleman was the foremost female naturalist of her generation and the first female to be awarded the Australian Natural History Medallion. So why has her name been allowed to fade into obscurity? And why have the vast majority of Australian nature lovers never heard of her?

As can be surmised from the title of this book, Edith's major contribution to science was the observation and understanding of pseudocopulation of *Cryptostylis* species (Australian native orchids) by male orchid dupe wasps. Fascinating reading!

While Edith Coleman was a prolific nature writer, she recorded almost nothing about her private life, so the author has cleverly divided text into three distinct areas - her interpretation of events in Edith's life, based on fact and always plausible; known historical facts re Edith's nature writing and scientific papers; and she has included a small selection of Edith's own charming nature essays.

Danielle Clode has taken what could have been a dull list of facts and, through her wonderfully articulate writing, turned them into a highly readable, un-put-down-able book. I have absolutely no hesitation in recommending *The Wasp and the Orchid* to all lovers of our Australian native orchids, our natural history and our beautiful and unique flora and fauna. This is no dry historical treatise!

This publication is available from **The Australian Orchid Foundation** at the reduced price of \$35, postage added.

It can be ordered from
www.australianorchidfoundation.org.au or phone
Helen Richards 03 9730 1995.

Helene Wild

Editor ANOS Victoria Bulletin

Email: editor@anosvic.org.au

Australian Orchid
Review


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August 3-5 National Orchid Extravaganza

– Dural, NSW

August 4-5 Warrigal Orchid Society

– Winter Show

– St. Sava Community Centre, Greensborough, VIC

August 17-19 St. Ives Orchid Fair

– St. Ives Showground, NSW

August 24-26 Melbourne Orchid Spectacular

– Boxhall Pavillion (KCC Park), Skye, VIC

September 22-23 Plant Lovers Fair

– Kariong, NSW

September 22-23 Southern Suburbs

Orchid Society

– 2018 Spring Show

– N.G. Wishart Senior Citizens Hall,
964 Nepean Hwy, Moorabbin, Vic

September 29 – October 7 Leura Gardens

Festival

– Blue Mountains, NSW

September 30 Hills District Orchids

– Spring Open Day

– Northmead, NSW

October 6-7 Warrigal Orchid Society

– Spring Show

– St. Sava Community Centre, Greensborough, VIC

October 12-14 Southern Orchid Spectacular

– Cronulla, NSW

November 3-4 Tweed Districts Orchid Fair

– Tweed Heads, NSW

November 11 Woolgoolga District Orchid Society

– Free Orchid Workshop

– Woolgoolga Public School, Yeates Hall,
1-11 Scarborough Street, Woolgoolga, NSW

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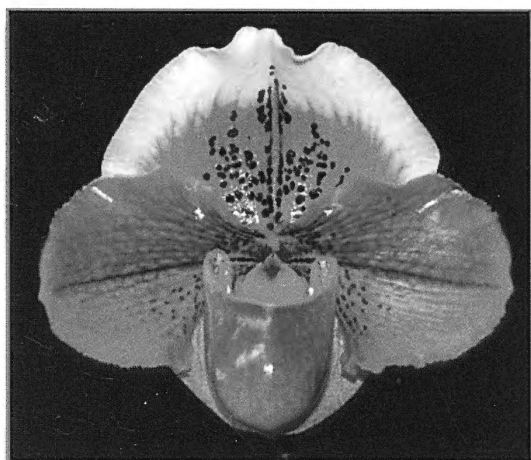
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